ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

Vol. XCII, No. 15 PAPER Thursday, April 9, 1931

# Institute of Paper Chemistry Starts Building

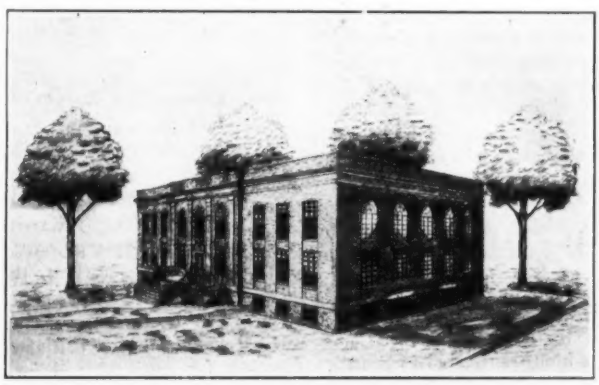
## Ben B. Ganther Co. of Oshkosh, Wis., Awarded General Contract and Will Have Structure Finished by August 1 in Time to Complete Equipment by Opening of the School Year —Students of the Institute Will Be Available to Any Paper Manufacturers in Perfectly Free Market—Ernst Mahler Heads the Institute

APPLETON, Wis., April 7, 1931—Construction has begun on the new building to house the Institute of Paper Chemistry, the graduate school affiliated with Lawrence college. The Ben B. Ganther Company of Oshkosh has been awarded the general contract. The building is scheduled to be completed by August 1, leaving ample time to install equipment before the opening of the new school year. Erection of the building at this time was made imperative because the work of the institution has grown so rapidly that the quarters in the new Alexander Gymnasium which were expected to be adequate for another year are already overcrowded. The Institute was opened in February, 1930, and now has seventeen students. There are four full-time members of the staff and five part-time. With the admission of a new class for next Fall and with the addition of new members of the staff and the installation of considerable amounts of additional equipment new quarters were imperative.

### Many Donations Received

The construction of the building is made possible at this time by the receipt of donations from a large number of individuals and groups most of whom have asked that their gifts be kept anonymous. In addition equipment is being furnished by many manufacturers of paper mill and paper testing equipment in the form of donations to the Institute. The building was designed by Orbison & Orbison of Appleton who have designed many paper mills. Associated with them as consultant was Chester Wolcott, architect, of Chicago. Both of these firms contributed their services in the design of the building. Specifications for the lighting, plumbing, heating, and ventilating equipment are now being drawn and contracts on these several items will be let in the near future.

The new building will be erected on property acquired by Lawrence college three years ago for its new south campus. The exterior will be of Lunnon stone with Indiana limestone trim, being uniform in this respect with the new Alexander gymnasium erected in 1929. It is to be two stories and basement. The front will face 115 feet on East South River street and will be fifty feet deep. There will be two wings, the one at the east eighty-four feet, and the westward wing sixty-three feet in length. All the partitions will be movable. In fact the interior is designed to give the greatest degree of flexibility in arrangement.



DRAWING OF NEW INSTITUTE BUILDING

### Site Contains Over Six Acres

The plot of land selected for the building contains over six acres, leaving ample room for expansion, and the construction is such, moreover, that the building con readily be enlarged. Its present floor space is approximately 18,000 square feet which should be ample for the next two or three years.

The first floor will have offices for the staff, conference rooms, an assembly room and the library. The west wing will house the library which is now the finest collection of books and periodicals on the subject of paper making to be found anywhere in this country.

### The Laboratories

The second floor will be devoted to laboratories. The entire east wing will be devoted to work in pulp and paper testing. In this section in addition to two large laboratories are three small individual research laboratories. One of the larger laboratories will be devoted to pulp and paper testing, the other to the development of special research in these fields. The central portion of this floor is devoted to laboratories for cellulose and organic chemistry. There will be one student research laboratory to accommodate seventeen students, a combustion laboratory, a weighing room, and a small individual research laboratory and adjoining office for the professor on organic chemistry. The west wing is to be devoted to colloid chemistry. It provides a large student laboratory, an individual research laboratory and adjoining office for the professor of colloid chemistry. There are two dark rooms, one for photometric work, and the second for photographic work. One other

*(Continued on page 28)*

# Badger Paper Mills Report Shows Net Profit

## Reorganization of Former Peshtigo Paper Co.'s Plant Highly Successful—Earnings of $129,339 Available for Preferred Dividends, Which May Be Declared Shortly—Completely Modernized Mill Producing 10,000 Rolls of Waxed Paper Daily

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 6, 1931—Financial reports issued for the year 1930 show the Badger Paper Mills, Peshtigo, Wis., to have been highly successful in the reorganization of the former Peshtigo Paper Company, which was in default and sold its assets at a receiver's sale. Net profit for 1930 was $89,189. During its first eleven months of operation in 1929, the company showed net profits of $40,189, so there are available earnings of $129,339 for preferred dividends. While the company has paid no dividends to stockholders thus far, it is intimated that the first one may go out during May.

Under the management of Edwin A. Meyers, president, the Badger Paper Mills has worked out a strong financial position, having cash and securities of $203,238, with current assets of $731,000, in comparison to current liabilities of $140,000, a ratio of better than five to one.

The company modernized its plant throughout during 1930, improved the quality of its paper and perfected a number of operating economies. A trade name has been developed for the watermarked bond, mimeograph and ledger paper. An extensive market has been developed for waxed paper for kitchen use, and the mill is now producing around 10,000 rolls a day. During the year four large color presses were installed, developing a line of printed and waxed bread wrapper specialties.

### Masonite Corp. Shows Rapid Progress

Capitalists and paper mill men of Wausau, Wis., who control the Masonite Corporation of Laurel, Miss., have issued a report showing rapid growth of the company in the manufacture and sale of "Masonite," the insulating material made largely from pulpwood. The plant is operating 24 hours a day and has reached a daily payroll of $2,200. Farmers are paid an average of $1,000 a day for pulpwood hauled to the mill. The masonite Corporation is an outgrowth of the Wausau Southern Lumber Company, which in 1902 invested large sums of money in stands of long leaf yellow pine in the vicinity of Laurel. The mill was started in 1912 and Arthur Glasgow, formerly of Schofield, Wis., is the manager. Since its beginning it has produced more than 1,100,000,000 feet of Masonite lumber.

Masonite was the invention of W. H. Mason, who sold exclusive patent rights to the Masonite Corporation. The latter has leased the patents to a firm in Sweden, where Masonite is being made for the European market under royalty. Under the Masonite process, the pulpwood is first shredded into chips, then blown from high pressure guns and pressed into sheets about 7/16 of an inch thick. The lumber is as durable as the finest hardwood and ideal for insulation. A pressed wood sheet also is being made for many building purposes, including tops of automobile bodies, forms for concrete, tiling, etc.

Among those interested in the company from Wausau are D. C. Everest, vice-president and general manager of the Marathon Paper Mills Company, Ben and Judd Alexander, Cyrus C. Yawkey, A. P. Woodson, W. H. Bissell, S. B. Bissell, M. P. McCullough and John Ross. All are interested in a number of paper mills in Wisconsin.

### News of the Industry

E. P. Engness, general manager of the Bates Valve Bag Company's plant at Menominee, Mich., has been transferred to Seattle, Wash., where he will take charge of a new Bates plant now under construction. The Menominee plant will be in charge of Thomas R. Polglase, of Chicago, until the return June 1 of Herman Haberle, who is spending two months in Europe.

Twenty-two storage reservoirs in northern Wisconsin supplying water to the dams of the Northern States Power Company have gone dry. Three others, the largest the company has on the Chippewa river, Flambeau river and Moose lake are down to a point where only the regular stream flow is being discharged. The company therefore is depending almost entirely on its steam plants at Minneapolis and St. Paul, Minn. for its current until conditions are remedied. Although the water storage amounts to twenty-billion cubic feet, even this failed during the drought of 1930 and the light rains of 1929. A dry season is also predicted for 1931. The steam plants are adequate for the needs, however.

John R. Buchanan, formerly with Appleton Wire Works, Appleton, Wis., and Thomas M. Cray, both of whom are associated with the Capital Wire Cloth and Manufacturing Company, of Ottawa, have applied for patents on a seamless joint for Fourdrinier wires. The joint replaces the standard sewed seam, makes the joint 50 per cent stronger, and does away with interference of the joint in proper drainage or free movement over suction boxes. Practical operation has proven the idea wholly satisfactory.

J. M. Conway, president of the Hoberg Paper and Fibre Company, Green Bay, Wis., has been selected by Governor Philip LaFollette, of Wisconsin, on an emergency unemployment committee of five men. This committee will direct the work of eliminating ninety railroad grade crossings on Wisconsin highways this summer, giving work to more than 6,000 men.

## C. Ross Somerville Dead

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 6, 1931—Widely known in paper and paper box circles in Canada, and one of the Dominion's leading business men, Charles Ross Somerville, proprietor of the Somerville Paper Box Company, London, Ont., died in New York City a few days ago, following an illness of several months duration. His remains were brought to London for interment. At his beside was his only son, C. Ross Somerville, Canadian amateur golf champion. The late Mr. Somerville was 75 years of age. About the middle of last January he had gone to a New York hospital to undergo an operation for a throat ailment. Up until two weeks ago his condition was considered favorable but he suffered a relapse, death ensuing on March 30. Deceased established his paper box organization in 1890 under the name of the C. R. Somerville Company and retired from active business life in 1910. He was vice-president of the Ontario Loan Debenture Company, president of the Northern Life Insurance Company, and a director of the London and Western Trust Company. During his long and busy life he had been identified with practically every movement which had for its purpose the advancement of educational, spiritual and social life in London.

## St. Regis Kraft Co. To Resume

[FROM OUR REGULAR CORRESPONDENT]

TACOMA, Wash., April 4, 1931.—More than 250 men will be given employment at the plant of the St. Regis Kraft Company, here, when operation is again resumed after a shutdown of several months. The official date for reopening the plant has been set for April 14, and for the present the mill will operate four days a week, turning out 600 tons of pulp weekly, according to W. W. Griffith, general manager.

TWO REASONS WHY TWO-THIRDS OF THE PAPER MADE ON THIS CONTINENT IS MADE THROUGH BIRD SCREENS:

# CAPACITY
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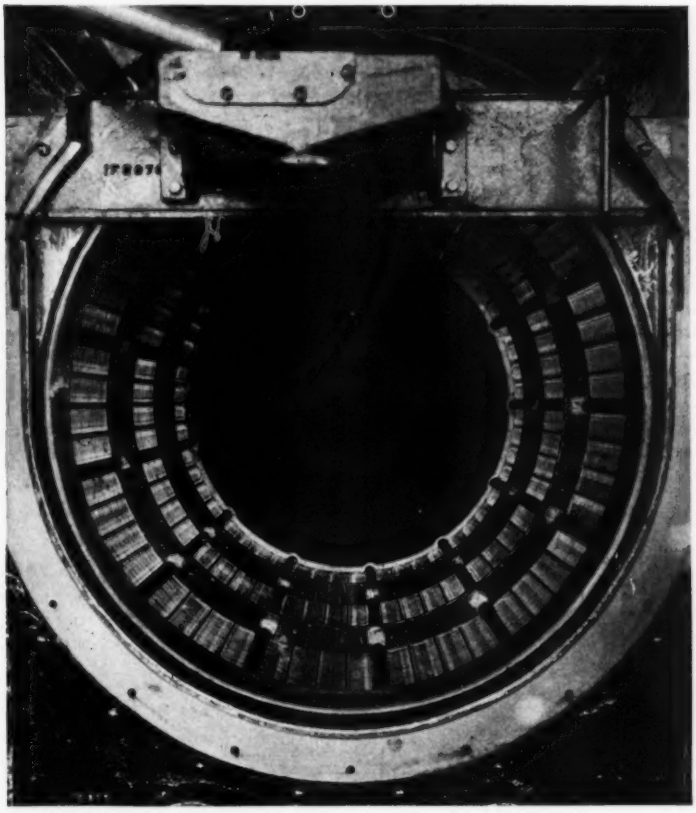

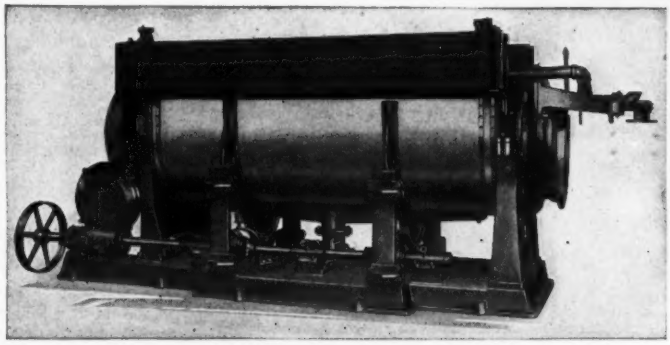

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# Chicago Paper Market Shows Improvement

## Period of Gradual Expansion Anticipated By Western Paper Merchants—Demand for Wrapping Paper More Lively Than for Some Time Past—Higher Grades of Fine Paper Exhibit Strength—Book and Cover Papers Moving In Fair Volume

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 4, 1931—A slow improvement in business, perhaps nothing more than seasonal, is ushering Chicago paper firms into the Spring period. Reports indicate that most merchants favor—and look for—a slow period of steady improvement, with nothing sensational in the offing. In the meantime various lines of paper favored by the season are showing their natural strength. Wrapping paper is reported as much strengthened over last week and even more improved over a ninety day period. Some strengthening in prices should be the result of the continued pick-up—slight but at least steady.

### Cover and Book Fairly Satisfactory

Book and cover papers are fairly satisfactory, with occasional price cutting reported no more than ordinary. Markets are fairly firm. In the glassine business no improvement has been made. News print is reported at about 60 per cent on production and shipments and ground woods are not in a favorable position. A very slight pick-up in board has been reported as the market is working to cut down over-production. No change is given in writings—the very high grades of fine papers, however, are said to have the most favorable position in the market at this time. Waste papers are sluggish—the only noticeable activity reported occurring in the higher grades.

### Paper Salesmen Continue Educational Series

With each program growing more interesting and educational, the Western Division of the Salesmen's Association of the Paper Industry may yet be forced into making these Monday meetings open house affairs. The salesmen are still talking about the discussion made a week ago by John Wesley, of Rhinelander, on the products and policies of his concern. The program for Monday, April 6, is to be featured by the appearance of Walter Cox, of the Paterson Parchment Paper Company, who is expected to give the salesmen an interesting talk on genuine vegetable parchment papers. It is probable that Mr. Cox will follow Mr. Wesley's scheme of exhibiting raw materials and telling just how the product of his organization is made.

The educational series, which headlines the salesmen themselves as spokesmen for their various companies, has had quite a bit to do with increasing the attendance at these weekly programs and bears out the belief that the way to get interest in organization work is to get the members themselves to provide the work. At the same time the membership committee of the association, under the direction of "Jim" Coy, is going ahead with its membership drive. It seems as though the association is intent on making a good record for and with the assistance of the new vice-president, Creighton Whiting. One of the newest membership acquisitions is Courtney H. Reeves, of the Allied Paper Mills, Kalamazoo. Mr. Reeves' office is at 400 West Madison street. Mr. Coy says that his chief method of running a membership drive is to appoint everybody a member of the membership committee.

### Chicago Paper Association's Activities

Arrangements are going ahead at full speed for the annual Salesmen-Member banquet of the Chicago Paper Association, which will be held in the main ball room of the Medinah Athletic Club on the evening of April 14. The annual affair, according to William J. Shapland, of the Fred Rent Paper Company, who again has charge of the event, should draw around 300 members of the association and their guests. The dinner will, of course, be one of the main events on the program. What follows after dinner will be presided over by D. F. Peck, of the Hanchett Paper Company, president of the association. A speaker has been secured for the main talk of the evening and, though his name has not yet been officially announced, he is to be someone actively identified with the industry. Other short speeches may follow—their "shortness" being assured by the program committee. Entertainment, of various and sundry kinds, will wind up what looks now to be one of the most successful of these annual events yet held by the association.

In the meantime, concerted action by members of the association to improve the kraft paper market here seems to have some effect. Volume business has increased somewhat and less price cutting is reported. The organization will now continue its program of studying ways and means of improving business methods, their procedure to be based on the very interesting report just made by an accounting firm hired by the association to delve into the business records of member organizations. Much work, it is said, needs to be done to strengthen this industry here.

### News of the Trade

Chicago offices have recently been opened up by the George W. Wheelwright Paper Company, of Leominster, Mass., the location of the new sales office being at 310 South Michigan avenue. K. H. Becker, with nearly twenty-five years of experience in the field back of him, will have charge of the branch. Sales activities will cover practically the entire Central States area.

T. O. Umbright, formerly with the Douglas Wray Paper Company is now with the sales division of Parker, Thomas & Tucker. Mr. Umbright was formerly in business for himself and his experiences in the paper field qualify him for unusual successes in his new connection.

"Rags in Paper," the thirtieth number of the newsy little house organ published by the Rag Content Paper Manufacturers, is again making the rounds of Chicago advertising and sales desks. The present issue delves into that delightful doggerel about walruses, cabbages and kings from Lewis Carroll's bit of nonsense. The copy follows through with a message featuring the "Time has Come" theme. And Mr. Carroll's poem is made good use of in convincing users that the time has come to judge, decide upon and use quality paper for letter heads and envelopes.

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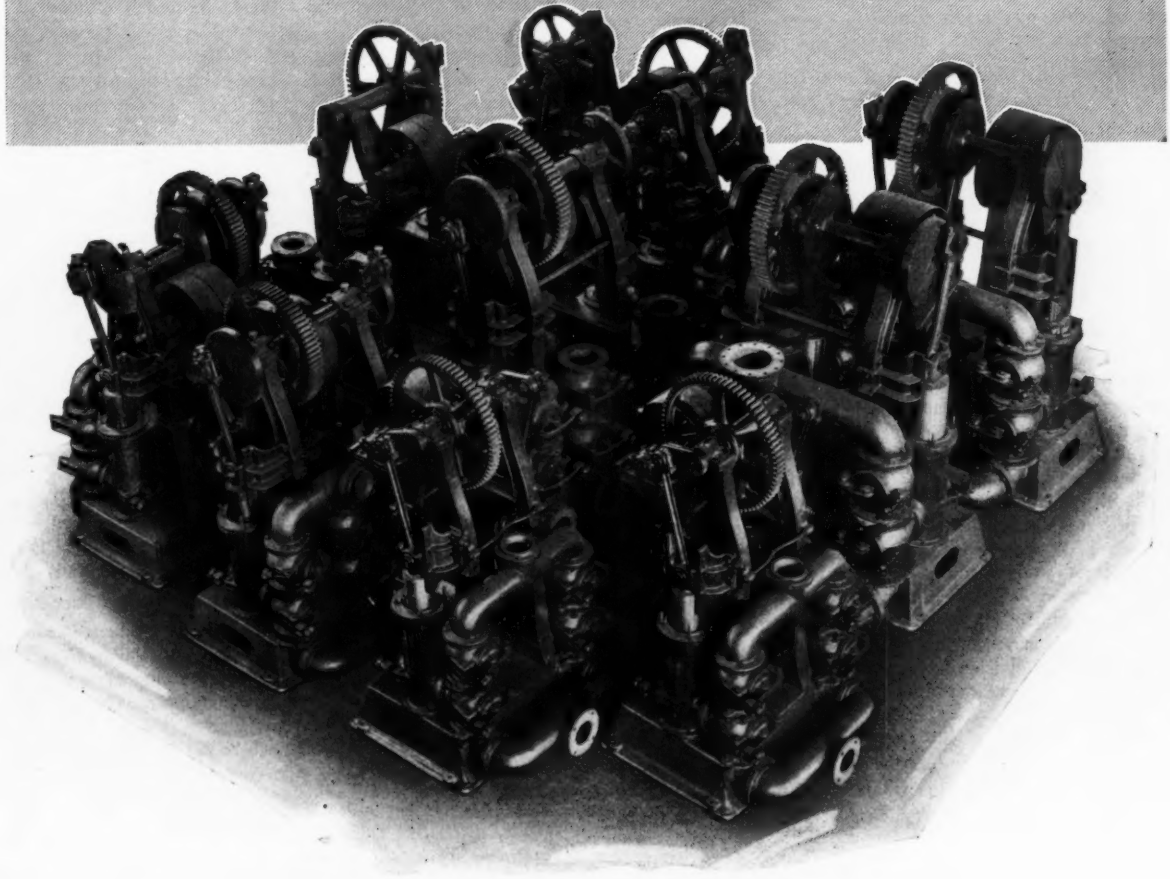
### New Oliver United Filters Catalog

"Vacuum Filtration With Oliver United Filters," is the title of a new illustrated bulletin just published by Oliver United Filters, Inc., of New York, Chicago, San Francisco, London and Paris. At the present time continuous filtration is being successfully used in many branches of the paper industry.

Three types of vacuum filters are manufactured by Oliver United Filters—the Oliver Continuous Drum Filter, the American Continuous Disc Filter and the Oliver-Borden Tube Thickener. The well known Oliver and American Pulp Filters, the Oliver Top Feed Filter and the Oliver-Campbell Cachaza Filter are modifications of these major types.

All of these continuous filters operate on the same principle and differ only in design. Each of them, however, has variations in detail of construction which many years of experience has shown necessary to best adapt them to the wide variety of products which are so successfully handled.

***Immediate Shipment***—Pumps are ofttimes wanted in a hurry. For that reason we always carry a stock of the most used sizes in both Duplex and Triplex Types. Hundreds of these pumps are now in use, giving excellent service. If you need a pump now, or at any time, write, wire or phone us. We can probably ship whatever you want, immediately. If you have never used a Downingtown Pump and would like to know about them, we will gladly send you a copy of our Catalog No. 111 and a list of mills using our pumps. Downingtown Manufacturing Co., Downingtown, Pa.



# Demand for Paper Irregular in Philadelphia

## While Wrapping Paper Distributors Are Moderately Active, the Various Grades of Fine Paper Are Only In Light Request—Conditions in Southern Kraft Industry Show Signs of Improvement—Paper Specialties Continue to Expand

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 6, 1931.—Typically of the holiday type, the past week was notable for its spotty demand, that fluctuated as Easter requirements governed buying. Wrapping paper merchants were active and reported a fair amount of orders. Folding boxes, parchments and like products moved in fair volume, despite hand to mouth purchasing. Fine papers were quieter. One of the most encouraging evidences of the growing improvement and steadier tone of the paper market was the advance in the price of kraft in the southern mills. The Philadelphia distributors, who are largely buyers of southern kraft, were much encouraged with the rise of 25 cents per 100 lbs., which took place last week. Now that the distributors have wiped out the heavy hold over inventories of last year the kraft market appears to be in fair way for betterment.

While the current season has been marked by dearth of new papers, there is a growing tendency to specialize and to make profits in specialties that are not so readily accessible to price cutting. Many of the wrapping paper merchants are now going after the trades where specialties have a good opportunity to advance against regular grades. This has been a helpful factor in maintaining business throughout the early months of the current year.

Absence of mill purchases marked the paper stock business of the holiday week, although there have been more frequent inquiries. Better grades of waste paper are being sought for future deliveries. Twines are most disturbing, as another fractional reduction was made within the week. This makes the third cut within the month. Both jute and cotton twines are in the marked down list.

### Paramount Paper Products Expansion

With the coming season the Paramount Paper Products Company, Third and Callowhill streets, will develop cellophaned commodities, including converted products in paper bag combinations and wraps, used by mercantile and food industries, such as bakers and confectioners and coffee trades. The firm is arranging to add to its machines the newer types of units to be devoted to conversion of cellophane and paper combinations and wraps that will augment its Parafan products of allied character.

### Paper Manufacturers Co. Start Construction

With the transfer last week of title to three additional properties in the 500 block on Callowhill street, the Paper Manufacturers Company started construction of its large new addition to the mammoth plant already in operation for the past decade, at Fifth and Willow streets, along the railroad siding belt line. The addition of five more properties on Callowhill street, gives the firm almost an entire city square for its plant taking in the area from Fifth to Randolph streets, on Callowhill street and connecting on Fifth street with the present plant and giving almost double present plant facilities for the gummed tape, gummed stay, and gummed flat paper business which the firm has recently made a major unit of its paper converting enterprises. President Frank A. O'Neill announces that the growth of the gummed tape and gummed paper division has warranted the expansion of buildings for the additional machines that will be installed to take care of the growing needs of this latest enterprise. The Paper Manufacturers Company will construct a twin addition to its present quarters, already one of the largest paper centers in this section. The new department will be given over to the manufacture of gummed tapes, gummed stay papers in creased and uncreased grades, and gummed papers in flat grades, in white and colors for consumption by the printing, lithograph and allied trades. These are distributed to the paper trade and large consumers as Kraft Weld and Perfection brands and are of exceptional quality in adhesiveness and paper basis developed in the firm's own laboratories after several months of experimentation.

### Enterprise Paper Co. Adds Box Department

The addition of a folding and corrugated box department has been announced by President Nathan Isen, of the Enterprise Paper Company, Third and Callowhill streets, with extension of stocks to lines that are salable with paper products. There will be carried in stock a complete assortment of folding and corrugated boxes used by cleaners and dyers, tailors, and the wearing apparel trades. Other acquirements are San-Nap-Pak cellulose sanitary papers, which the company will distribute in four states, including Pennsylvania, Maryland, Delaware and District of Columbia.

### Central Paper and Twine Co. In Bankruptcy

Petition was filed in the United States District Court here for voluntary bankruptcy by the head of the Central Paper and Twine Company, conducting a bag, twine, and wrapping paper business at 826 South 5th street. The head of the firm is Seide Seidel. John M. Hill was appointed referee. No assets or liabilities were filed.

### R. W. Whitney Visits Hinde & Dauch Offices

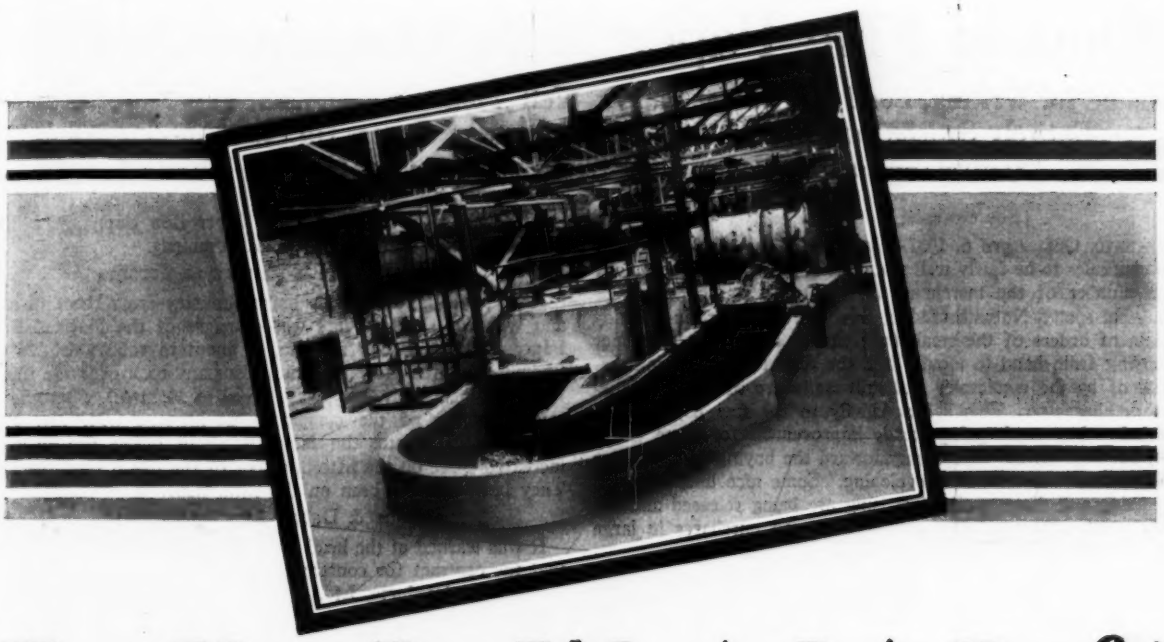
R. W. Whitney, sales manager of the Hinde and Dauch Paper Company, main offices, Sandusky, Ohio, stopped over in Philadelphia to confer with H. P. Johnson, manager of the Quaker City branch, while on a tour and survey of the entire Eastern offices and plants of the manufacturers.

### Norristown Magnesia & Asbestos Co.'s New Product

A recent development in the asbestos industry is the Norbestos Fyr-Bord, produced by the Norristown Magnesia and Asbestos Company, Norristown, Pa. The board was developed to meet the requirements of a building board that will withstand high temperatures. In tests conducted by the manufacturers the Fyr-Bord has successfully withstood for more than one hour temperatures ranging from 1,800 to 2,000 without the slightest trace of disintegration. It, however, is not to be confused with the various wall boards on the market, either in asbestos types or the ordinary paper boards, and is not competitive with asbestos lumber, having not been designed for exterior use. Of gray color, it is manufactured with rough surface on one side for plastering, the opposite side being smooth finished for painting. It may be procured in standard sizes of sheets 4 ft. by 7 ft. 6 in. and from 1/8 in. to 1/2 in. thickness. It is recommended by the manufacturers for use where complete fire protection is desired and where extremely high temperatures are to be encountered.

### Ehret Magnesia Mfg. Co. Shows Engineering Products

With its complete assortment of engineering products in asbestos the Ehret Magnesia Manufacturing Company, Valley Forge, Pa., is featuring an exhibit of its full lines for engineering purposes at various power shows throughout the country. The latest show was that staged by the Midwestern Engineering Exposition, Inc., held in the Coliseum in Chicago where refrigeration and heating products in asbestos blocks, pipe coverings and building boards were shown.



# Turn Your Rag Waste Into Profit

IT IS absolute economic folly to discard the rag waste from continuous beating systems in board mills when a Marcy Rod Mill will convert it into valuable paper stock at a very low power cost per ton.

This waste is charged to the Marcy Rod Mill in a tangled mass of rags, rope, string, wire, shoes, rubber, wood and other refuse always found in unsorted papers. After pulping this mass in a Marcy Rod Mill separation is simple, while before it was impossible. The valuable pulp is carried off while the heavy "junk" settles out.

One 5′ x 10′ Marcy Rod Mill with 80 H.P. will convert 4 tons of this rag waste material into high grade paper stock in 24 hours. It permits the paper manufacturer to utilize material which he now throws away and one of the easiest ways to make money is to utilize all of your waste products.

This additional production at such a low power cost will quickly pay for the installation of a Marcy Rod Mill. One of our engineers would be glad to visit your plant and show you how you can improve your product and reduce your manufacturing costs through the use of a Marcy Rod Mill. No obligation, of course.

The MINE and SMELTER SUPPLY COMPANY

PAPER MILL DIVISION

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# MASSCO

# Ontario Fine Paper Mills Continue Active

## Demand for Writing, Bond and Ledger Papers Well Maintained—Book Paper Tonnage On Entirely Satisfactory Basis, With Fair Volume of Orders On Hand for Future Delivery—Coating Paper Mills Showing Somewhat Greater Activity

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 6, 1931.—Business in the wholesale paper line continues to be fairly well maintained, although the testimony of a number of the merchants is that trade is inclined to be somewhat spotty. Notwithstanding this, however, there is a steady stream of orders of the small bulk variety and if the consumer is buying from hand to mouth still, the total tonnages being disposed of by the wholesaler and mill trade are of quite a satisfactory character. This refers chiefly to the fine paper trade, which has been undergoing steady improvement for some weeks past, although the slight tendency toward the buying of the better grades of stock is slow in developing. Some nice lines of work in catalog and direct mail advertising are being released and the paper trade is profiting accordingly, although purchases in large bulk are still absent from the general paper trade.

There is quite a fair demand for writing, bonds and ledgers, and the tonnage of book paper is on an entirely satisfactory basis. A feature of mill activity is a fair amount of orders ahead for future delivery, but in most other lines of fine papers orders are just about up to the machines. Coating mills are showing somewhat greater activity under a fair demand for stock, the market for this class of fine paper having improved materially during the past few weeks. The fine paper trade appears to have picked up considerably of late and good spring business is looked for.

The situation with regard to the coarse paper market is not so satisfactory. Business conditions generally have not been lending themselves to a wide distribution of wrappings and paper bags, and mill operations and wholesale activities in this department are comparatively light. Manufacturers of light weight papers report sales well maintained, there being quite a good demand for tissues, toilets and specialty lines generally. The paper converting trade continues quiet, with a light call for most manufactured stationery lines, while the paper box industry has not yet recovered from its depression. On the other hand, the board mills have been increasing their activity and a fair amount of stock is being disposed of. Board mills are now making fair requisitions for waste paper.

### Box Company's Profits Are Reduced

With a sharp decline in earnings for the past year, Corrugated Paper Box Company set about adjusting operating conditions to reduced business, and during the year overhead charges were considerably cut down. In order to preserve the working capital position, the company cut off payments on the preferred dividends in the middle of the year, although these would have been earned by a slight surplus, 7.23 per cent, as against 7 per cent dividend rate. Profits were almost cut in two, $60,052, as against $114,936, which in turn were considerably reduced from $171,376, in 1928. The saving on dividends helped to increase net working capital from $119,285 to $195,201. Inventories have been sharply reduced from $216,262 to $125,069. Bank loan and overdraft of the previous year, amounting to $174,076, has been cut 75 per cent, to $42,756.

Dealing with the current situation, the president, J. S. A. Whealy, declares that "It is impossible to predict the course of business for the present year, as the depression of last fall is still with us." The company closed the year with a credit balance of $196,445, as against $162,638 at the end of the previous year. Competition during the year was intensified by the entrance into the field of new competitive corrugating units. The balance sheet includes not only the Corrugated Paper Box Company, Ltd., of Toronto, but Hilton Bros., Ltd., of Winnipeg.

### Robert B. Hall Returns to Toronto

R. B. Hall, known in the paper industry from coast to coast, and who for several years was manager of the Howard Smith Paper Mills offices in Toronto, is about to return to this city. Shortly after the Howard Smith Company took over the Canada Paper Company, Mr. Hall was moved to Montreal, where he was sales manager of the company. Co-incident with Mr. Hall's removal to Toronto, the Howard Smith offices are to utilize increased space on the fifteenth floor of the Royal Bank Building. They have hitherto been on the sixth floor.

### Hinde & Dauch Awards Contract

It was learned at the head office of Hinde & Dauch in Toronto that the contract for construction of the new plant of the Maritime Paper Products, Ltd., Halifax subsidiary of the Hinde & Dauch Paper Company, had been awarded to W. G. Foley & Co., Halifax, who have already commenced work. The plant will be completed early in June when it will immediately commence operation to take care of contracts now on hand from most of the principal users of corrugated cartons in the Maritimes. The building, of brick and steel construction, will be about 300 feet long, and will contain 20,000 square feet of floor space. Pickings & Wilson, Montreal, are the architectural engineers.

### Notes and Jottings of the Trade

Recalling the fact that there was no coated paper when he started in the printing game fifty years ago, and that paper was made in quires, F. Y. Stevenson, for over twenty-five years with the Reid Press, Ltd., in Hamilton, Ont., thanked the donors of a gift at a dinner tendered him by the company on the occasion of his retirement as superintendent at which many printers and paper men were present.

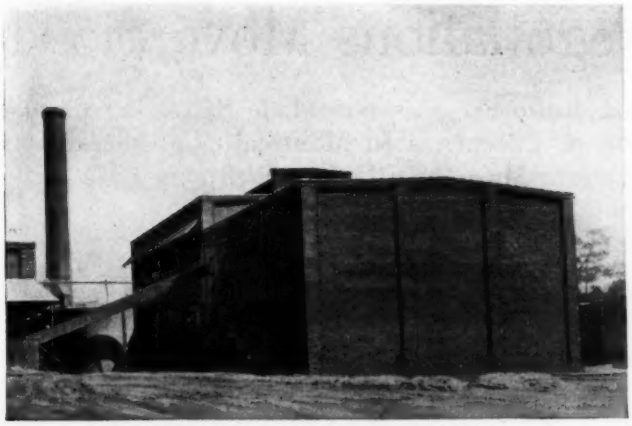
George Marshall, well known in printing and paper circles in Toronto, has been appointed superintendent of the Fullerton Publishing Company in that city and has entered upon his duties.

"The Paper is the Big Part of the Letter," is the title of an attractive circular sent out by Fred W. Halls Paper Company, Ltd., Toronto, on Royal Record White, demonstrating the printing qualities of the sheet.

Forest fires took a toll in Ontario last year of 711,809 acres, according to the annual report tabled a few days ago in the Ontario Legislature by the Department of Lands and Forests. A considerable amount of pulpwood was destroyed.

The purchase of a property at 736 Dundas street East, Toronto, marks nearly a decade of progress in the manufacture of paper drinking cups and kindred sanitary equipment by G. H. Wood & Co., Ltd. For the purpose of distributing its products throughout Ontario the company took over the Liquid Soaps and Sanitary Products Manufacturing Chemists, in 1923, with a small plant on Jarvis street. In the same year warehouses were opened in Montreal and Ottawa. The company will use the newly acquired property for expansion purposes.

H. F. Brunton, 612 Rushton Road, Toronto, who for several years was Ontario sales representative of the Canadian International Paper Company, has entered upon his new duties as Canadian representative of the Garrettson-Ellis Lumber Company, of Springfield, Mass. C. R. Robertson, recently with the International Paper Company in Montreal, has been transferred to Toronto.



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# News Print Merger Negotiations Move Slowly

## Admissions Made In Influential Quarters That Little Progress Was Made Regarding Proposed Super-Consolidation At Recent Meeting of Executives In Montreal—Considerable Shaking Up of Present Organizations Must Precede Any Such Step

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 6, 1931.—While events are moving slowly in the news print world in regard to negotiations between executives, they are moving rapidly in the direction of economic pressure, and it is evident even to the most casual observer that the crisis so long impending is coming speedily to a focus. The closing down of various high-cost news print mills was the first obvious sign in this direction; the financial difficulties disclosed by the annual reports of the various companies, and at their annual meetings, show the relentless pressure towards drastic action.

As regards the meetings of news print executives in Montreal last week, it is now admitted in influential quarters that little or no progress was made in regard to the proposed super-merger of news print companies, and it is apparent that a considerable shaking up of present organizations must precede any such culmination, if indeed the merger, as at present outlined, ever takes place. Ernest Rossiter, president of the St. Lawrence Corporation, went so far as to state, at the annual meeting of that company, that while the attitude of those in the industry is pretty much in favor of some consolidation move, there are no negotiations at present, adding: "Until such time as the situations in Minnesota and Ontario and Canada Power and Paper are cleaned up, there will be little opportunity to discuss mergers. The Minnesota and Ontario Company is in the hands of a receiver, while a reorganization plan is being worked out for Canada Power and Paper."

Another phase of the situation came up in Parliament at Ottawa, when questions were asked regarding the proposed merger of paper plants involving $690,000,000. A report that, in connection with the suggested merger, it was probable that considerable economy would result in operation from the fusion of plants and the closing down of certain mills, was referred to by the Hon. Peter Heenan, former Minister of Labor. There were towns and workmen who would be affected by such a step, he said.

Premier R. B. Bennett replied that the question of construction of paper mills came under provincial control, except in the case of Manitoba. Mr. Heenan was probably aware to some extent of this fact. The Combines Investigation Act would not be applicable in such cases; and, in any event, there had been nothing officially announced in the matter.

Then in Ontario Premier Henry made his contribution to the news print miscellany by stating that the Ontario Government had not been consulted by Premier Taschereau, of Quebec, in regard to backing up the request that the Canadian International Paper Company divide up some of its tonnage to keep the other news print producers from bankruptcy.

### St. Lawrence Corp.'s Annual Meeting

Attention generally was concentrated during the week on the annual meeting of the St. Lawrence Corporation, Ltd., largely because this was one of the companies specifically mentioned as likely to figure in the suggested merger. A feature of the proceedings was a discussion upon this matter.

Answering questions, President Rossiter said that in the past there had been so much bickering and horse-trading that the Canadian Newsprint Institute had not been carried on properly. He described the situation as "not impossible, but difficult." He suggested that recent actions indicated a more definite working arrangement.

During the past year, he told a shareholder, St. Lawrence Corporation had been obliged to give out tonnage under the terms of the pooling arrangement with the Institute. The contract in this connection was legally binding upon all in the Newsprint Institute and he indicated that during the current year the Newsprint Institute could be expected "to take more positive action for its own protection."

D. H. Taylor made a strong plea to the directors to hold the identity of the company and remain outside of any merger negotiations. He asked for a statement from the president in connection with recent rumors of merger discussions. While the attitude of those in the industry is pretty much in favor of some consolidation move, there are no negotiations at present, Mr. Rossiter said.

Mr. Taylor asked if the receiver in the case of the Minnesota company was in a position to take matters in his own hands and solicit tonnage apart from the Institute agreement. He also asked if this would be the situation with the Canadian company now facing a probable similar situation. While Mr. Rossiter was of the opinion that a receiver, in either case, would be free to act as he wished, he said the attitude of these companies to date has been to seek advice.

Asked if the Newsprint Institute had done anything about prices, Mr. Rossiter said that prices were not a matter of Newsprint Institute declaration but for the individual companies. Mr. Taylor, in registering his protest against St. Lawrence Corporation taking any part in merger negotiations, said he hesitated to dictate to a board of directors such as that of St. Lawrence. The attractive feature of St. Lawrence in a merger, he said, was its freedom from bonded indebtedness, with the single exception of one subsidiary property.

"Don't think these other people will rest," he said, "until they get this company sandwiched into a larger company. We have excellent management, and I wish to register an emphatic protest against any such move. Time ought to be in our favor. The industry is over-capitalized at the present time, but over a period of years this will be rectified. I would prefer to see this company sit tight until general business picks up. Other interests want to take in these unbonded properties just to sweeten their propositions.

Mr. Taylor likened the news print situation to the wheat pools and cautioned against anything of that nature for St. Lawrence Corporation. "Don't try to sell their chaff with our wheat," he said near the close of the meeting.

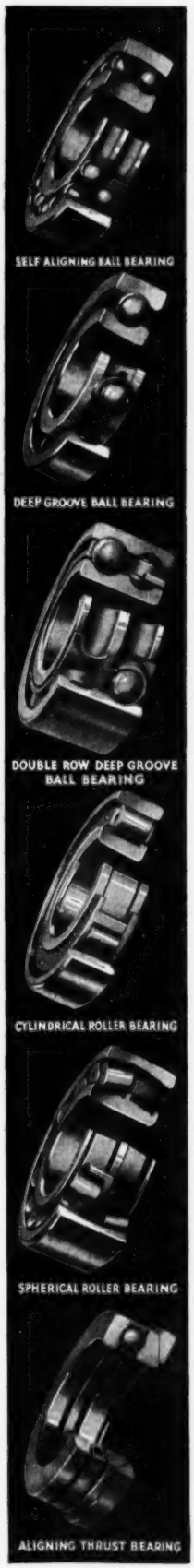
Answering another shareholder, Mr. Rossiter said that Price Brothers were still members of the Institute, although Col. John Price had resigned as chairman. In reply to Mr. Taylor, the president said that no company could prosper unless the industry prospers, and that he felt very optimistic about the industry, which he stated would become Canada's greatest.

The meeting gave its approval to some technical changes in the by-laws, bringing the fiscal year end of the corporation into line with the subsidiaries, fixing the date of the annual meeting and the method of mailing notices of the meeting.

Two vacancies on the board were filled by the election of R. W. Steele, of Montreal, and S. W. Pittman, of New York. The openings were created by the resignation of Lawrence MacFarlane, K.C., and the death of J. A. Bothwell. The remainder of the previous board were re-elected.

### Quebec Pulp and Paper Corp.'s Report

Quebec Pulp and Paper Corporation's financial statement for the year ended December 31 last shows a loss for the period be-

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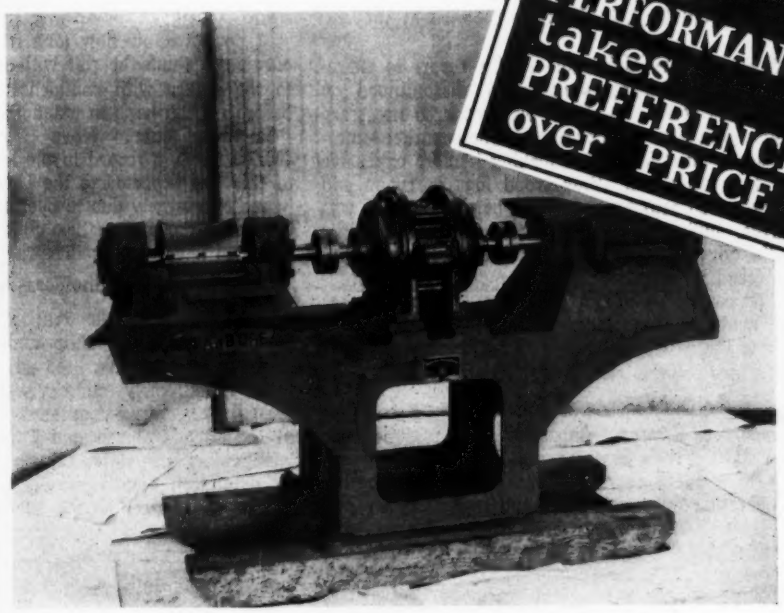

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# SKF

fore providing for depreciation amounting to $264,006. This contrasts with a loss in the preceding year, also before provision for depreciation, of $309,082. This is the third report to be issued by this company and there is shown a total operating deficit for the three-year period of $945,664.

The balance sheet reveals total assets at $10,651,827, as compared with $11,388,961 at the end of 1929. Fixed assets at $9,625,588, compare with $10,275,616 at the end of the preceding year. Investments show an increase from $311,466 to $729,932, while inventories are cut from $257,032 to $135,454 at the end of 1930.

The president, A. Stewart McNichols, in his report to shareholders, states that grinding operations were discontinued on October 31 last. This action, he states, was rendered necessary by the unfavorable condition of the ground wood market—unremunerative prices and curtailed output making it more expensive to operate than to close down. Pulp wood logs in rivers and yards were all converted into ground wood before the mill was closed. He further indicates that the present severe economic depression and the adverse factors affecting specifically the paper industry have blocked all efforts at solving the company's problems. He adds that conditions will have to improve before further progress can be made, and concludes that in the meantime the work of conserving the assets will continue, but will show a loss until some satisfactory solution can be arrived at.

### Fraser Co.'s Earnings Decline

The annual report of Fraser Companies, Ltd., for the year ending December 31 last show that earnings fell off heavily and were insufficient to provide for fixed charges. Net operating earnings after operating expenses, taxes and provision for bad and doubtful debts, but before depreciation, interest and depletion were only $278,289, against $1,419,961 in the preceding period.

It was considered advisable in view of declining markets for lumber, to make further provision for losses in inventory of lumber, logs and pulpwood, which item was accordingly written down by $1,938,215 resulting in a net deficit on the year's operations of $1,659,925. During the year bond, debenture, note and other interest required $1,737,153 and $822,391 was written off for depreciation and depletion. These charges resulted in net loss of $4,219,470 from which, as shown by the balance sheet, was deducted the previous balance at credit of profit and loss account of $937,900, leaving net deficit of $3,281,569 as at December 31, 1930.

In its working capital position, the company's year resulted in considerable impairment, working capital at December 31, 1930, standing at $2,492,404 against $4,225,593 at the end of the preceding year.

The company's directors and its bankers are stated to be making a thorough review of the company's position, and it is expected that recommendations will be made to the shareholders as soon as possible as to what steps are desirable and necessary to meet the present difficult situation.

Archibald Fraser, the president of the company, in his report to shareholders, states that the substantial reduction in operating profits from the previous year was in the main the result of large losses in lumber operations. The report further states that the company's sulphite and ground wood plants at Edmundston, and its bond papers, catalog and board plants at Madawaska have, by improvements and careful management, been made more efficient and the quality of the company's products has been standardized and improved.

### Mersey Paper Mills Progress

I. W. Killam, who organized the Mersey Paper Mills, in Nova Scotia, spoke at a banquet in his honor by the Halifax Board of Trade. He said the industry established by the Mills was one of the most promising in the Maritime Provinces.

The speaker expressed his faith in the future of Mersey Mills, and while making no definite prediction, expressed the hope that the time would come when it would be feasible to add other units to the plant's equipment. So far the net result of the undertaking had been very fortunate, although construction had been more expensive than anticipated.

Mr. Killam paid particular tribute to Col. C. H. L. Jones, president of the Mersey Company, who replied by saying that:

"Although we have proven the mill to be a good one we have not yet reached the peak of operations, and will make more records yet. The news print industry is going through the worst year in its history, and some mills have failed to weather the storm.

"I do not know how long it will take the depression to work out; but I think the rise will not be sudden. However, we look to the future with confidence, although it may be some time before we can hope to extend the mill."

Pulpwood cut in Nova Scotia last year amounted to over 400,000 cords, a record in the history of the province. Over half of this was exported to the United States for manufacture. The increase is largely due to operation of the Mersey Paper Mills at Liverpool though smaller pulpwood plants in the province are stated to have consumed more wood than in the previous year.

### Bondholders Receive Warning

Bondholders of the Anticosti Corporation, Belgo Canadian Paper, Port Alfred Pulp and Paper and St. Maurice Valley Corporation have just been advised that continuance of bond interest is extremely unlikely, with reference made to the recently created protective committee representing all classes of securities of the Canada Power and Paper Corporation. In the notice to bondholders it is stated that in order to obviate the consequences of default, a plan for re-organization should be evolved and carried into effect at the earliest possible moment. The committee is at present time stated to be hard at work on a plan for capital readjustment.

### International Increases Operations

The pulp mill of New Brunswick International Paper Company at St. George, N. B., has resumed operations. The mill was reopened after an extensive shut down late in 1929 and closed again in July, 1930. It is interesting to note that the Pulitzers, who have now disappeared from the publishing field, were the former owners and operators of the mill.

The mill of New Brunswick International Paper Company at Dalhousie, running on short time for some weeks owing to lack of power following water shortage, went into full operation today. Rated capacity of the plant is 550 tons of news print daily.

### Brompton Pulp & Paper Co. Elects

At the annual meeting of shareholders of the Brompton Pulp and Paper Company, a subsidiary to St. Lawrence Corporation, C. G. Greenshields and J. E. McCrea, former members of the board, retired. Others elected to the directorate were Ernest Rossiter, N. A. Timmins, J. I. Rankin, R. W. Steele, A. F. White, R. O. Sweezey, H. A. Clarke, G. Cottrelle.

R. W. Steele, vice-president, presiding at the meeting, stated that nothing had beeen done with regard to a possible merger of the company's properties, and it was not likely that anything would be done until other units in the industry had clarified their positions.

### Howard Smith Paper Mills Meeting

The third annual general meeting of the shareholders of Howard Smith Paper Mills, Ltd., will be held on April 20. The meeting will be made special to ratify a by-law approving the company's employees' stock distribution plan, confirming the action of the trustees under said plan in borrowing the sum of $100,000 from Montreal Trust Company for the purpose of acquiring shares to be resold to employees; affirming the liability of this company in respect of repayment of the said sum and interest, and also to provide for the election or appointment of more than one vice-president.

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**Intimate attention to the design and finishing of special castings in all metals.**

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- Baker Stainless Steel Valves and Digester Fittings
- Winder Shaft—Patent Split Type
- Pulp Refiner—Single or Twin Type
- Wet Machines and Deckers
- Vertical and Horizontal Baker Centrifugal Pulp Screens
- Horizontal Rotary Screens
- Centrifugal Pumps in Bronze, Iron and Hard Lead
- Bronze and Hard Lead Valves, Pipe and Fittings for Sulphite
- Steel and Semi-Steel Valves for Soda and Sulphite
- Winders, Reels, Fibre Crossers

# An Old Timer's Reminiscences

By Joseph H. Wallace, Pres., Joseph H. Wallace & Co.

*(Continued from last week)*

### C'Est La Guerre!

When the authorities finally decided that it was *our* war too, our organization tried to get into it. When the Engineer Corps turned us down, it made us doubt our usefulness but D. C. Jackling volunteered at $1.00 per year and became Director of Explosives, Department of Ordnance, and immediately gave us jobs that took all the organization. The writer received an appointment as consulting engineer for explosives on March 18, 1918, and was assigned to the design of Area E, at Nitro, West Virginia, where the government was to build a large smokeless powder plant. The function of Area E was to receive raw material in the form of cotton linters and hull fiber and deliver it as bleached purified fiber to the Nitrating Department. Our portion of the 100 million dollar powder plant was just like four soda pulp mills, each having a daily capacity of 80 tons of bleached pulp. Our forces were moved to the site on April 20, to begin construction work while plans were being made. One unit was operating September 16—less than six months from date of our appointment, the second was operating October 15, the third was ready Armistice Day, November 11, and the fourth would have been completed December 10, if we hadn't lost our best customer, viz. Kaiser William II and his associates.

### Enormous Results from P. T. J. Ad

Adolph W. Waern and Ivor Muerling, two very able Swedish engineers, and Richard Laftmann, later general manager at Bogalusa, Louisiana, were our principal assistants in the design and later in operating Area E. We had advertised in the PAPER TRADE JOURNAL for pulp operators, engineers, chemists, etc., who were willing to get into action to help us and the response from Kelly's, Riley's, Smith's, Brown's and other famous pulp and paper families was enormous. Each one found a job awaiting him, largely of his own choosing and that bunch of hustlers was a delight and needed little pushing.

Then our laboratory and miniature pulp mill were taken over for experiments on substitutes for cotton fibers. This work engaged the undivided attention of Frank E. Greenwood for many years my partner, a born research engineer and chemist, now in the research laboratory at Munising, Michigan. Robert Stevens, later chemist at Bogalusa, Louisiana, was also important in this work, which was continued for about a year after the Armistice. We were afterward assigned to membership on the Committee of Consulting Engineers that met twice a week in Washington. In June, we were appointed to consult with Hercules Powder Company regarding operating the Nitro Powder Plant when it should be completed and we were placed in charge of Area E for these operations. This rush job was an experience that we look back on with keen pleasure.

### Army Men Guard "By-Products"

An amusing occasion was the visit of several army officers to our laboratory and farm up in the hills back of Stamford, Connecticut. They were various ordnance experts detailed to watch tests to determine the possibility of pine pulp from the South as a substitute for cotton linters and hull fiber. In the basement of one building were several barrels among the tanks and piping connected with our miniature sulphate and soda mill equipment. We were asked what the barrels contained and we replied "By-products." As a matter of fact it was a fine collection of apple-jack of various vintages made from our own apples over a term of years. When we drank some our inquirer was shocked, then amused and followed suit. That started a procession to and from that basement that continued all that Saturday afternoon. Several officers remained over Sunday, feeling that it was unsafe to leave the laboratory unguarded, for fear of a German attack. Sunday afternoon we had a dinner, the piece de resistance being pigeon potpie. We told the guests it was Crow Pie, and its fame had resulted in our place being christened Crow's Nest. A week later in New York we heard one of our guests telling about the recipe for cooking crows and making a delicious potpie, being the result of our laboratory research work for the War Department. While we confess we have eaten a lot of crow since then, it has been purely mental.

I really feel that perhaps after all I should have been a sharp-shooter instead of just a powder maker in the war. There were a couple of chance shots in my earlier days that prove it.

### A. B. Never Believed It

One day up in Vermont, way back in the 90's, I was showing Garrett Schenck a talc mine that he and Charlie Barton owned and which I had been surveying. I had been carrying a short 32 caliber rifle to and from the mine for the purpose of a bit of practice on partridges that would just about be landing on a tree branch for the night as I came down. To hit them in the head as they landed was my idea, and it was a good idea if it worked, as one doesn't eat the head—but it is some shot—so the mortality among partridges in Vermont wasn't serious. But I did now and then get some! Schenck had been told that I shot partridges in the head with a rifle! They didn't say that the partridges were sitting so he had a notion that either I could shoot or else partridges were plentiful. So he came with shotgun and all paraphanalia so that the birds would know a real hunter was available. We scared up three partridges on the way up to the mine and each time Schenck shot, *but* the partridges flew on. He got madder with each shot and finally said "let's see you shoot." I stated that there was nothing to shoot at. He spied a gray squirrel eating a nut on a tree branch fifty feet away and said "shoot that." I protested but he insisted. I retorted "Why shoot the squirrel?" He said, "You can't shoot, you are only bluffing." And I came back with a shot at random and so help me, it knocked the nut from the squirrel's paws! I don't know who was most astounded. Schenck sat down and wiped his brow. The squirrel looked around to see who took that nut, and I recovered first and said nonchalantly, "Well, come on." Schenck told that story to Tower but A. B. never believed it, and I don't blame him or you either.

### Cheer Up, The End Is Near

Chance shots do occur! Once in Lancashire, England, I was confronted with the necessity of making two good golf shots consecutively on a dog leg course in which the green was visible from the tee, but the distance and the intervening terrain made two shots the invariable rule. I could occasionally "drive a ball a mile," but never had made two good iron shots consecutively, so decided to try for the green with a driver. Friends standing about were loud in protestation. When the chance shot came through and hitting a well placed flat rock, 200 yards or more away, bounded some 50 yards further, rolled up a bank, across the green and hit the flag pole at the hole but couldn't get in. I was given a medal, and a quart. That shot is still talked about by those who witnessed it and still live. At least the writer still talks about it, and so would you if it was practically the only good shot you ever made.

Cheer up—the next installment will be the last.

*(To be Concluded)*

# TROUBLED WITH BASIS WEIGHTS?

IT is impossible to get a uniform sheet from inconsistent stock. Beater chest dumpings are bound to vary. Without some added means of consistency control, trouble is sure to result at the slices, on the driers, on the reels and calenders, and most important of all, out in the field where your paper is sold and used.

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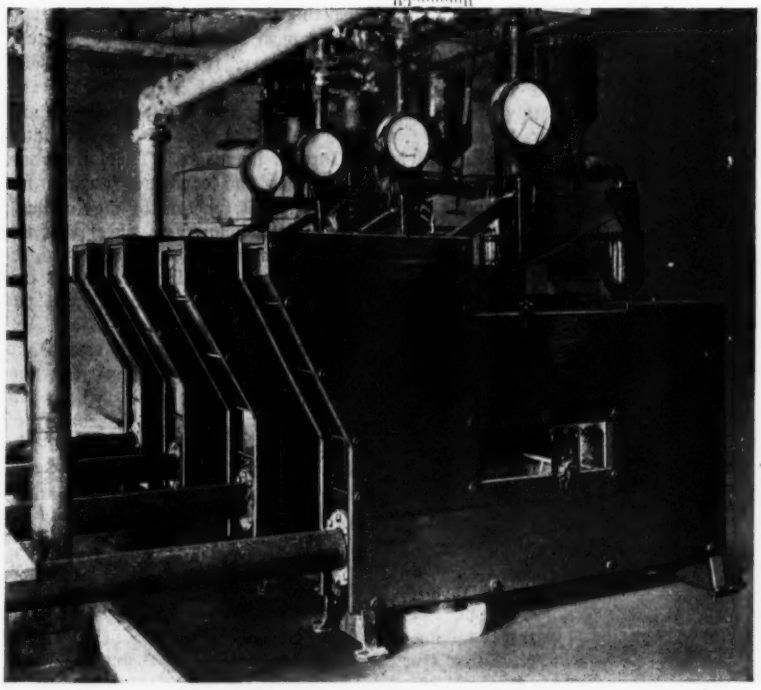

The indispensable function which the Regulator performs is demonstrated by the great number of repeat installations being made. It is an inexpensive machine and quickly pays for itself many times over in the production of better paper. Write the Valley Iron Works Co., Appleton, Wisconsin.

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# INSTITUTE OF PAPER CHEMISTRY STARTS BUILDING

(*Continued from Page 13*)

large research laboratory is provided on this floor for purposes of expansion. It is arranged as to permit the use of small digesters, beaters, or any other small apparatus.

The laboratories on the second floor are serviced from a second floor storeroom, which has provision for an electric hoist connecting this room with the main storeroom in the basement.

The laboratory furniture to be used in the organic laboratories will be of the best fireproof construction. The material used in the desks is a copper bearing alloy steel, lead coated, upon which three coats of special acid and alkali proof enamel have been baked. The tops and shelves will be of Alberene stone. This will insure fireproof conditions in those laboratories in which there is any fire hazard. The tables to be used in the colloid and pulp and paper laboratories will have solid steel end supports and Presdwood tops.

### Semi-Commercial Pulping Equipment

The basement and first floor of the east wing is to comprise one large room, twenty feet high. It will house the semi-commercial pulping equipment. Digesters are now being constructed which will produce fifty pounds of air-dry sulphite, soda, and sulphate pulp. A rag boiler which will produce one-hundred and fifty pounds of half stock is all ready for installation. There will be several beaters varying from one pound and a half capacity up to twenty-five pounds capacity, a series of sheetmoulds, a wet machine, chipper, blow pits, storage tanks and the like.

At the rear will be the boiler room and a machine shop for the construction and repair of equipment.

A large constant humidity room is being provided in the basement, where all quantitative paper testing operations will be carried out. The room will be of sufficient size to accommodate a number of students. In addition to this laboratory there will be a research laboratory devoted to the use of the Masonite fellow, where high pressure hot presses, special sheetmolds and the like will be provided. A room for the storage of inflammable chemicals is being constructed outside the building under the front porch. This will be separated from the building proper by an adequate fire door which will further insure protection of the building from fire. The main storeroom is likewise located in the basement. A concrete ramp will be constructed to make it possible to unload large crates directly from the outside.

The Institute of Paper Chemistry was launched by a group of Wisconsin mills one and one-half years ago, but it was with no purpose to make it a Wisconsin institution. Ninety per cent of the industry in that state entered into contracts in order to guarantee a minimum budget for the institution for a period of five years. No appeal was made to the industries outside of the state to support the institution before the project was actually under way. It was intended from the outset, however, to be a national institution. There was no competition in the field inasmuch as no other institution was offering a complete program of work in this field at the graduate level. The central location of Appleton, the fact that within a radius of seven miles most forms of pulp and paper making and paper conversion were represented, make it an ideal position.

### Becoming a National Institution

The first way in which the Institute achieved its purpose of becoming a national institution was in the composition of its student body representative of the whole country. This policy met with the greatest possible success. There is only one Wisconsin student and there are students from California, Massachusetts, Maine, Washington, Iowa, Ohio, Indiana, Illinois, Pennsylvania, and Connecticut. These students understand definitely when they come that upon receiving their degrees, their services are available not only to member mills but are available to any paper manufactures in a perfectly free market.

The second point at which the Institute received nation wide recognition came from the auxiliary industries, manufacturers of paper mill machinery and equipment and those which supply materials of one kind or another to the industry. Gifts of experimental equipment have been forthcoming from a wide variety of manufacturers and cash contributions toward the construction of the building from many others. A number of student fellowships were established by various corporations and the number of problems presented to the Institute through research fellowships has exceeded all expectations.

At the last annual meeting in February, the American Paper and Pulp Association adopted the following resolution, thus giving specific recognition of this enterprise on the part of a national association:

WHEREAS, the paper industry has suffered in the past, from a lack of men, trained in scientific subjects pertaining to pulpwood, pulp and paper, and

WHEREAS, it is realized that technical men, adequately trained both practically and academically, are and can be an increasingly important factor in the future development of the paper industry, and

WHEREAS, the Institute of Paper Chemistry at Appleton, Wisconsin, a graduate school for the training and development of technical workers in the field of paper chemistry and technology organized in 1929 by a group of interested and progressive paper manufacturers draws its students from all parts of the country and through its program can render a distinct service to all branches of the industry;

BE IT RESOLVED, That the American Paper and Pulp Association endorses the work of the Institute of Paper Chemistry and commends its program to all those engaged in or associated with the paper and pulp industry as being worthy of consideration and financial support.

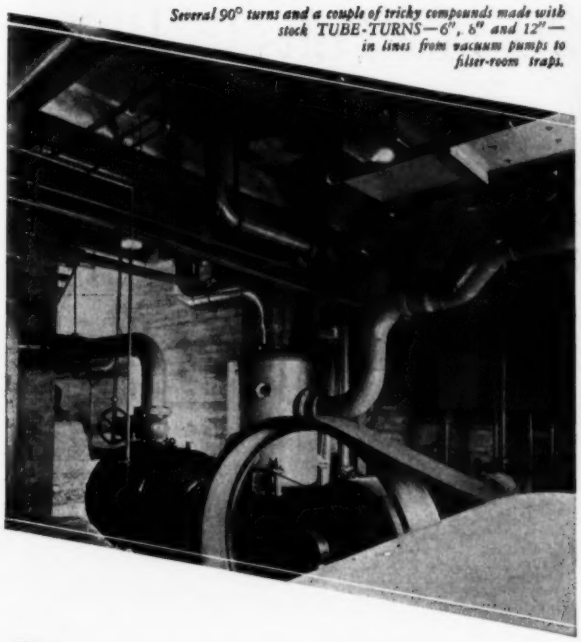
The Technical Association of the Pulp and Paper Industry has also recognized the Institute and has made a contribution to its work. Other national organizations of various sections of the industry have similar action in contemplation.

### Accumulating a Reference Library

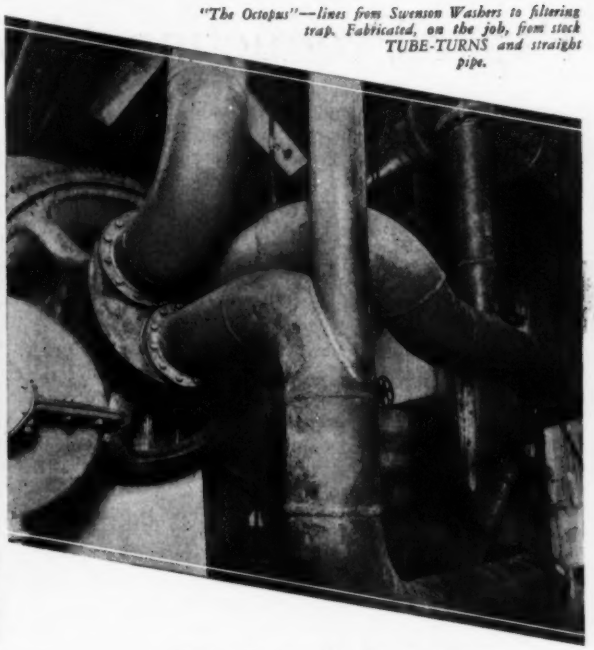
A number of individuals realizing that one of the most important and at the same time one of the most expensive features of such an organization would be the library, contributed large sums to make possible the rapid accumulation of a reference library. A monthly library bulletin is published and sent to members and to others by subscription. The abstracting is of periodicals printed not only in English but in foreign languages. The library has also made up special bibliographies and conducts research for participating mills. While the principal function of the Institute, therefore, is to train students for the industry in order that the technical equipment of its personnel may be steadily improved, its research activities are also important and its library services can have a tremendous value to the industry as soon as mills put themselves in a position to take advantage of it.

The United States was the last great country to establish a nationally recognized school at post graduate level for this industry. The rapid transformation taking place within the industry through the last ten years has made the desirability of this institution more and more clear, and it is to be hoped that the support of the enterprise will not be left to the Wisconsin manufacturers and a few others, but that the industry as a whole throughout the country will take an active part in its development, progress, and management.

The officers of the Institute are: Ernst Mahler, president; D. C. Everest, vice-president; Henry M. Wriston, director; Otto Kress, technical director; and Westbrook Steele, executive secretary, who has been maintaining the contacts of the Institute with the industry at large. Other trustees are: Monroe A. Wertheimer, Dan K. Brown, Lewis M. Alexander, and Hugh Strange.



*Several 90° turns and a couple of tricky compounds made with stock TUBE-TURNS—6", 8" and 12"—in lines from vacuum pumps to filter-room traps.*



*"The Octopus"—lines from Swenson Washers to filtering trap. Fabricated, on the job, from stock TUBE-TURNS and straight pipe.*

# BROWN PAPER MILL OKAYS *these* BETTER *Pipe Fittings*

NOTICE those neat, new-type fittings in the photos above? They are Tube-Turns—seamless fittings for pipe welding—installed in the tremendous new addition to the Brown Paper Mill Co. plant at West Monroe, La.

George F. Hardy, of New York, was the designing engineer. The M. W. Kellogg Co. installed all the piping and equipment. And according to Mr. George S. Holmes, General Manager of the Brown Co., they "put in more piping in an hour with Tube-Turns and welding than we could in a day using other fittings."

But that's only *one* advantage of Tube-Turns. Notice, for instance, how easily and compactly they can be installed in small space. Notice the neat, trim lines that mean LESS PRESSURE-DROP. Notice the tricky turns and special fittings—all fabricated *on the job* from stock Tube-Turns. Mr. M. C. McDonald, Chief Engineer, says he couldn't have built "The Octopus" (upper right) if he hadn't had Tube-Turns!

*Tube-Turns are made in 45°, 90° and 180° types.*

*In sizes ¾" to 18" Standard I. P. S. and 1" to 12" Extra-Heavy I. P. S.*

*Uniform in wall thickness—no thinning, thickening, buckling or flattening. Stronger. Lighter. Easier to install and insulate. They NEVER leak.*

All in all, there are just about a dozen reasons why Tube-Turns can save trouble, space, time and money for any large pulp or paper mill. We'd like to give you the facts—also a list of other prominent mills that are already using Tube-Turns. *Write!* No obligation, of course. TUBE-TURNS, *Incorporated,* 1329 S. Shelby Street, Louisville, Kentucky.

. . . . . TUBE-TURNS . . . . . .

TUBE-TURNS, *Incorporated*
1329 S. Shelby Street, Louisville, Ky.
Please send me, without obligation, full engineering facts and data on Tube-Turns as applied to pulp and paper-mill piping.

*Firm Name* .....

*Address* .....

*Attention Mr.* ..... *Title* .....

# Paper Production 11,090,543 Tons in 1929

The Bureau of the Census announces the publication of a special report, compiled from returns received at the biennial census of manufactures taken in 1930, which gives a summary for the industry, together with detailed statistics on products, consumption of principal materials, and paper-making machines in use.

### Complete Returns

The summary for the industry and the statistics of production are revisions of figures originally published under date of December 31, 1930. In order to avoid undue delay in publication, the preliminary report presenting those statistics was compiled before the returns from a number of manufacturers, including several important ones, had been received, and it was necessary, therefore, to include estimates for these manufacturers. Complete returns are now available, and accordingly the revised figures are presented in this report.

### Increases in Paper and Board

The total production of paper and paper boards in 1929 amounted to 11,090,543 tons, valued at $897,522,605. These figures represent increases of 10.9 per cent and 2.9 per cent, respectively, as compared with 10,002,070 tons, valued at $872,206,847, reported for 1927, the last preceding biennial census year. The total for 1929 is made up as follows: Produced for sale, 9,910,776 tons, valued at $813,652,308; produced and consumed in the same plants in the manufacture of converted paper products, 1,179,767 tons, valued at $83,870,297.

### Materials Consumed

The quantities and cost of the principal materials consumed by paper mills in 1929 were as follows: Wood pulp, 6,245,349 tons, costing $299,571,655; rags, 739,571 tons, $33,295,206; paper stock, 3,841,942 tons, $74,232,577; manila stock (rope, jute bagging, etc.), 128,800 tons, $6,115,292; straw, 566,469 tons, $5,036,709; rosin, 38,390 tons, $2,155,204; rosin sizing 98,423 tons, $6,402,617; casein, 18,451 tons, $4,346,664; clay, 468,191 tons, $7,072,556.

### Number and Capacity of Machines

The numbers and capacity of paper machines in use in 1929, as reported by paper mills, were as follows: Fourdriniers, 937, with a total capacity of 21,937 tons of 2,000 pounds per 24-hour day; cylinder machines, 839, with a total capacity of 21,865 tons per day.

The statistics for 1929, with comparative figures for 1928 and 1927 where available, are given in the following tables:

TABLE 1

SUMMARY FOR THE INDUSTRY: 1929 AND 1927
(Revised)

| | 1929 | 1927 | Per cent of increase or decrease (—) |
|---|---|---|---|
| Number of establishments | 683 | 710 | — 3.8 |
| Wage earners (average for the year)[1] | 102,334 | 98,566 | 3.8 |
| Wages[2] | $138,981,656 | $130,474,739 | 6.5 |
| Cost of materials, fuel, and purchased electric current[2,3] | 571,113,270 | 572,785,538 | [5] |
| Products, total value[2] | 961,414,544 | 919,891,465 | 4.5 |
| Paper and paper boards produced for sale | [4] 813,652,308 | [4] 807,969,857 | 0.7 |
| Other products | 147,762,236 | 111,921,608 | 32.0 |
| Value added by manufacture[5] | 390,301,274 | 347,105,927 | [5] |

[1] Not including salaried employees.

[2] Manufacturers' profits can not be calculated from the census figures because no data are collected for certain expense items, such as interest on investment, rent, depreciation, taxes, insurance, and advertising.

[3] The cost-of-materials item for 1927 is not strictly comparable with the corresponding item for 1929 because of the fact that the schedule for 1927 provided for the inclusion of data on the cost of mill supplies, whereas that for 1929 stated that such data should not be included. For this reason no per cent of decrease is presented.

[4] In addition paper and paper boards to the value of $83,870,297 for 1929 and $64,236,990 for 1927 were produced and consumed in the same plants in the manufacture of the "Other products" (converted paper products).

[5] Value of products less cost of materials, fuel, and purchased electric current. The figure for 1927 is not strictly comparable with that for 1929 because of the change in the cost-of-materials item. (See footnote 3).

TABLE 2

PAPER AND PAPER BOARD—PRODUCTION, BY CLASS, AND QUANTITY: 1929, 1928 AND 1927
(Revised)

A census of the paper industry is now taken annually. For the odd-numbered years the same class of data are collected as for other manufacturing industries covered by the biennial census; but for the even-numbered years the only data collected are those relating to production and paper-making machines in use. The schedule used for 1928 did not call for data in as much detail as did those for 1929 and 1927, and consequently some of the figures in this table may not be strictly comparable as between 1928 and the other two years.

| Class | Quantity (tons, 2,000 pounds) 1929 | 1928 | 1927 |
|---|---|---|---|
| Total | 11,090,543 | 10,403,338 | 10,002,070 |
| News print, standard, in rolls and sheets | 1,409,169 | 1,415,450 | 1,516,929 |
| Hanging paper | 101,002 | 96,390 | 112,658 |
| Catalogue | 111,771 | 138,660 | [1] 183,338 |
| Poster, novel, news-tablet, lining, etc. | 150,649 | [1] | [1] |
| Book paper, uncoated | 1,497,912 | 1,334,326 | 1,269,321 |
| Cover paper | 28,072 | 27,043 | 26,333 |
| Writing paper | 587,383 | 550,472 | 508,808 |
| Wrapping paper | 1,605,783 | 1,467,271 | 1,525,305 |
| Sulphite | 215,777 | 351,786 | 290,724 |
| Kraft | [3] 846,468 | 873,578 | 637,295 |
| Other | 543,538 | [4] 241,907 | 597,286 |
| Boards | 4,451,187 | 4,061,803 | 3,773,608 |
| Container board | 2,255,537 | 1,984,697 | 2,100,150 |
| Folding box board | 991,285 | 947,613 | 796,216 |
| Set-up box board | 599,665 | 620,809 | 444,228 |
| Building board | 131,969 | 80,881 | 71,235 |
| Binders' board | 64,165 | 78,839 | 51,610 |
| Cardboard | 47,233 | 102,602 | 49,244 |
| Leather board | 24,228 | 18,911 | 24,195 |
| Press board | 11,901 | 7,775 | 6,938 |
| Other | 325,204 | 219,676 | 229,792 |
| Tissue paper | 370,468 | 348,174 | 316,070 |
| Absorbent paper | 78,694 | 74,768 | 63,766 |
| Building paper | 659,142 | 566,440 | 625,589 |
| Other paper | 39,311 | [4] 322,541 | 80,345 |

[1] Includes data for poster, novel, news-tablet, lining, etc.

[2] Not reported separately.

[3] Includes 134,234 tons sulphate, for bags.

[4] For 1928, some "Wrapping paper" other than sulphite and kraft was reported as "Other paper."

TABLE 3

PAPER AND PAPER BOARD—PRODUCTION, BY CLASS, KIND, QUANTITY, AND VALUE, 1929
(Revised)

| Class | Quantity (tons of 2,000 lbs.) | Value |
|---|---|---|
| Paper and paper board, aggregate | 11,090,543 | $897,522,605 |
| Produced for sale | 9,910,776 | 813,652,308 |
| Produced for consumption in the manufacture of converted paper products in same plants | 1,179,767 | 83,870,297 |
| Paper and paper board, aggregate | 11,090,543 | 897,522,605 |
| News print, standard, in rolls and sheets | 1,409,169 | 80,706,899 |
| Hanging paper | 101,002 | 7,293,931 |
| Catalogue | 111,771 | 9,570,858 |
| Poster, novel, news-tablet, lining, etc. | 150,649 | 11,743,437 |
| Book paper, total | 1,497,912 | 168,271,655 |
| Book paper | 1,176,596 | 131,852,168 |
| Lithograph | 19,877 | 2,417,196 |
| Offset | 26,304 | 3,847,128 |
| Body stock for coated paper | 250,234 | 26,755,587 |
| Other book paper | 24,901 | 3,399,576 |
| Cover paper | 28,072 | 6,429,856 |
| Writing paper (fine), total | 587,383 | 111,532,795 |
| One hundred per cent rag | 17,397 | 11,143,620 |
| Less than 100% to 50% rag | 40,416 | 15,972,906 |
| Less than 50% rag | 60,806 | 15,536,771 |
| Sulphite bond | 264,402 | 40,033,437 |
| Other chemical wood-pulp writing paper | 204,362 | 28,846,061 |
| Wrapping paper, total | 1,605,783 | 163,442,409 |
| For bags, sulphite | 47,002 | 4,308,885 |
| For bags, sulphate | 134,234 | 11,411,650 |
| Unbleached sulphite wrapping | 143,568 | 13,564,762 |
| Bleached sulphite wrapping | 25,207 | 3,101,407 |
| Bogus and screenings | 38,529 | 2,086,111 |
| Greaseproof | 7,965 | 1,607,962 |
| Glassine | 47,438 | 9,736,951 |
| Heavy (mill wrappers, etc.) | 63,238 | 3,423,428 |
| Northern kraft | 375,055 | 40,505,718 |
| Southern kraft | 282,218 | 23,146,229 |
| Pacific coast kraft | 54,961 | 4,847,524 |
| Rope, jute, etc. | 62,270 | 12,075,511 |
| Groundwood and chemical manila | 54,893 | 4,600,729 |
| Tag board, light manila board, and pattern | 30,616 | 3,503,586 |
| Other wrapping paper | 238,589 | 25,521,956 |
| Boards, total | 4,451,187 | 227,760,522 |
| Container board: | | |
| Liners | 1,108,852 | 55,212,515 |
| Chip (plain and test) | 785,199 | 27,865,152 |
| Straw (for corrugated container use) | 361,486 | 16,085,279 |
| Folding box board (bending): | | |
| Manila-lined (all lined boards) | 590,523 | 30,869,321 |

# At Last the Perfect Doctor

For every place where a doctor is needed.

RICE, BARTON & FALES

INCORPORATED

WORCESTER, MASSACHUSETTS, U. S. A.

*Paper Making Machinery Since 1837*

| | Quantity (tons of 2,000 lbs.) | Value |
|---|---|---|
| Patent coated | 182,831 | 11,213,066 |
| Other folding box board (including shell and unlined boards) | 217,911 | 11,085,633 |
| Set-up box board (nonbending): | | |
| Chip and straw | 325,111 | 11,754,491 |
| Newsboard | 189,028 | 7,430,984 |
| Other (including tube, egg-case filler, pasted news, and pasted chip boards | 85,526 | 3,859,432 |
| Building board: | | |
| Wall board | 59,216 | 4,599,351 |
| Insulating board | 72,753 | 8,406,535 |
| Binders' board | 64,165 | 4,675,097 |
| Cardboard | 47,233 | 4,921,690 |
| Leather board | 24,228 | 2,942,498 |
| Press board | 11,901 | 2,480,486 |
| Other board | 325,204 | 24,358,992 |
| Tissue paper, total | 370,468 | 51,132,284 |
| High grade | 63,834 | 15,307,089 |
| Manila and No. 2 white | 40,691 | 5,543,375 |
| Napkin | 29,536 | 4,138,515 |
| Toilet | 142,725 | 15,102,952 |
| Towel | 52,283 | 4,903,065 |
| Waxing | 41,399 | 6,137,288 |
| Absorbent paper, total | 78,694 | 15,036,024 |
| Blotting | 14,125 | 2,828,427 |
| Matrix | 4,281 | 1,516,233 |
| For vulcanized fiber | 25,928 | 4,106,713 |
| Other absorbent paper [1] | 34,360 | 6,584,651 |
| Building paper, total | 659,142 | 39,375,990 |
| Sheathing paper | 52,205 | 2,214,947 |
| Felt | 540,130 | 32,544,935 |
| Asbestos-filled and asbestos paper | 66,807 | 4,616,108 |
| Other paper | 39,311 | 5,225,945 |

[1] Filter paper and paper for parchmentizing, etc.

TABLE 4
CONSUMPTION OF CHIEF MATERIALS: 1929

| Class | Quantity (tons of 2,000 lbs.) | Cost |
|---|---|---|
| Wood pulp: | | |
| Purchased | 2,186,333 | $129,527,566 |
| Produced for consumption in paper mills operated in conjunction with pulp mills | 4,059,016 | 170,044,089 |
| Rags | 739,571 | 33,295,206 |
| Paper stock | 3,841,942 | 74,232,577 |
| Manila stock (rope, jute bagging, etc.) | 128,800 | 6,115,292 |
| Straw | 566,469 | 5,036,709 |
| Rosin | 38,390 | 2,155,204 |
| Rosin sizing | 98,423 | 6,402,617 |
| Casein | 18,451 | 4,346,664 |
| Clay | 468,191 | 7,072,556 |

TABLE 5
PAPER MACHINES, BY TYPE, NUMBER, AND CAPACITY, BY KIND OF PAPER MADE: 1929

**The statistics presented in this table are not strictly comparable with the corresponding figures in the reports for 1927 and 1928, because for those years each machine was classified according to the principal product made on it, whereas for 1929 the establishments were instructed to report as follows: "Where the same machine is used for producing more than one kind of paper, report the number opposite the item indicating the kind of paper *normally* produced and divide the capacity according to the kinds of paper made on that machine."**

| Class | Total capacity per year of 310 days (tons, 2,000 lbs.) | Fourdrinier: Number | Fourdrinier: Capacity per 24 hrs. (tons, 2,000 lbs.) | Cylinder: Number | Cylinder: Capacity per 24 hrs. (tons, 2,000 lbs.) |
|---|---|---|---|---|---|
| Total | 13,578,620 | 937 | 21,937 | 839 | 21,865 |
| News print | 1,695,080 | 126 | 5,461 | 1 | 7 |
| Book paper | 1,774,750 | 239 | 5,691 | 4 | 34 |
| Cover paper | 46,810 | 13 | 132 | 3 | 19 |
| Writing paper | 600,160 | 142 | 1,909 | 2 | 27 |
| Wrapping paper | 2,039,800 | 200 | 5,532 | 74 | 1,048 |
| Boards | 5,642,310 | 33 | 767 | 569 | 17,434 |
| Tissue paper | 450,430 | 108 | 998 | 93 | 455 |
| Absorbent paper | 129,580 | 35 | 319 | 12 | 99 |
| Building paper | 897,760 | 5 | 230 | 74 | 2,666 |
| Other paper | 301,940 | 36 | 898 | 7 | 76 |

## New Stainless Steel Valve Bulletin

The Alloy Steel Products Company, Boston, Mass., engineers and fabricators of stainless steel chemical process and food equipment, announces a new line of valves. Their new bulletin, now ready for distribution, describes and illustrates their complete line of gate, globe, angle and Y valves, available in all of the stainless steel alloys.

## Beaters

Machinery suitable for beating, bleaching and washing is described in a bulletin issued by the Valley Iron Works Company, Appleton, Wis.

## Boston Paper Trade Happenings

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 6, 1931—The following committees of the New England Paper Merchants Association have been appointed for year: Survey committee to cover both fine paper and wrapping paper divisions—Graham Blandy, chairman, M. O. Byrne, Eric D. Walden; Wrapping paper division credit committee—R. M. Stone, chairman, Frank Winters, Morgan L. Ellis; Kraft committee—Willard Loud, chairman, Frank Merrill, R. M. Stone, Le Roy Gardner; Twine committee—Leon Young, chairman, C. A. Shaw, J. F. Blackman, Hartley Hurlbert, Percy Wyman, C. H. Beckwith; Tissue committee—F. B. Tracy, chairman, Alden Howard, Frank Cate; Gummed tape committee—John Roach, chairman, Wesley Binford, Wm. Massey, A. W. Logan; Bag committee—E. A. Eaton, Warren Chase; Fine paper division credit committee—C. A. Esty, chairman, W. Stetson, Jr., W. Walpole, C. S. Proctor, William Ross. The May meeting of the New England Paper Merchants Association is to be held in Worcester.

The Cambridge Paper Box Company, Cambridge, Mass., has taken over the paper box factory at the Walter M. Lowney plant, which was recently acquired by Candy Brands, Inc. The box company will operate the box plant at its present location, 427 Commercial street, until March, 1932, under the present supervision. The business of the newly acquired plant from July, 1929, to July, 1930, was about $290,000.

The F. S. Webster Company, manufacturers of carbon paper, 340 Congress street, are to remove soon to a building in Kendall Square Cambridge.

Arthur E. Ham & Sons are putting on the market a new line, Air Route Bond, made by C. H. Dexter & Sons, Windsor Locks, Conn. This paper, primarily for use in air mail correspondence, but suitable for other purposes, is shown in a unique sample book, probably one of the most unusual types of books issued. The paper is designated by the number of typewritten copies which can be made at one time, instead of by weights. The sample book contains also much valuable information in regard to air mail rates and how the paper can be used for air mail.

The Jordan Card and Paper Company are now using a room adjoining their office at 170 Summer street, for stocking their lines for the wholesale trade. The lines handled by this company include blanks, Bristols and bonds white and colored. The company has adopted the policy of selling in complete lots only.

A test of a specimen from the newspaper, the *Boston News Letter*, published in Boston in 1704, showed that the paper was composed mainly or wholly of hemp and jute fibers. While the paper had a brownish color, judging from its excellent strength and pliability, it had not deteriorated appreciably, according to the United States Bureau of Standards.

The Boston office of the Albemarle Paper Manufacturing Company, of Richmond, Va., now in Room 726, Chamber of Commerce Building, is to be located on April 15 in larger quarters in Suite 442, in the same building. Blair B. Stringfellow, Jr., the New England representative of the company, will continue in charge of the office.

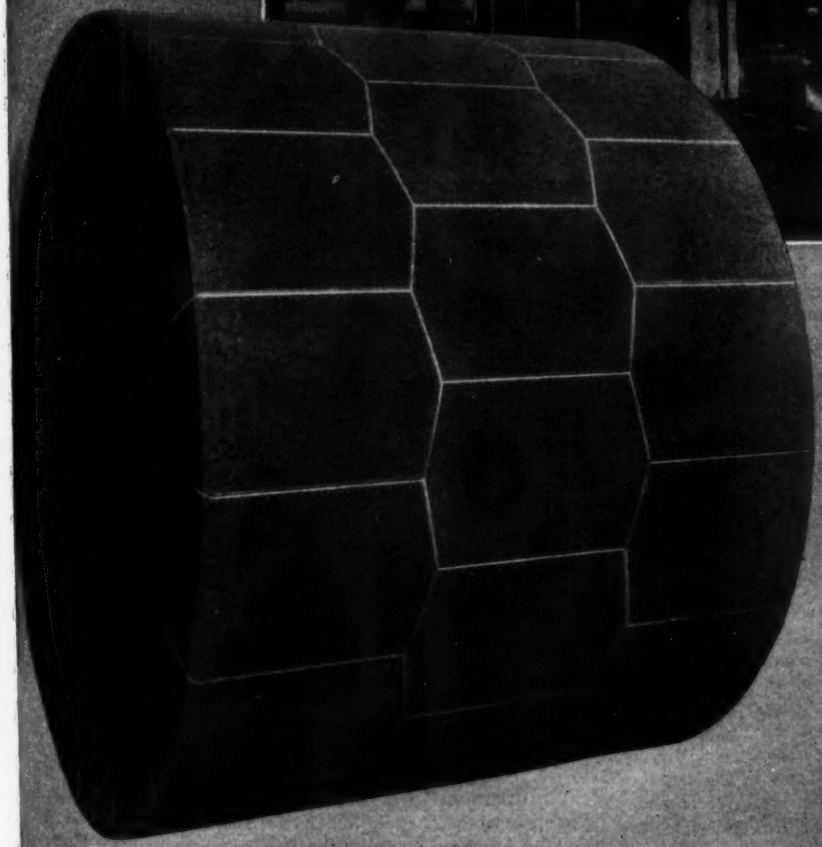
The New Haven Pulp and Board Company, New Haven, Conn., have shut down their No. 1 machine to make changes in the wet end. The work will probably be completed within three or four weeks.

The Ciel Sales Company, manufacturers of refractone papers, have begun operations in Leominster, Mass.

The Dennison Manufacturing Company, Framingham, Mass., is operating the Northway Motors plant.

The Champion Paper Box Corporation has been incorporated to conduct business in Fall River. There are 100 shares of no par value. Incorporators: President, Benjamin H. Whitestone; treasurer, Emanuel M Jaffe, 155 Girard street, Brooklyn, and Charles Soforenko.

# IN FINLAND—



Now definitely accepted in Europe as in the United States and Canada—

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Grinding Wheels
Grinding Machines

NORTON
PULPSTONES

Refractories—Floor
and Stair Tiles

# New York Trade Jottings

R. S. Kellogg, secretary of the News Print Service Bureau, and Mrs. Kellogg, spent the Easter holidays at Lime Rock, Conn.

* * *

W. R. Burt, representative of the Weyerhouser Forest Products Company's mill, the Northwest Paper Company, at Cloquet, Mich., spent the past two weeks in New York City developing specialties with the converting trade.

* * *

Matters of vital interest to the members were discussed at the regular weekly meeting and luncheon of the Eastern Division of the Salesmen's Association of the Paper Industry, which was held at George's Restaurant on Tuesday.

* * *

Importers of paper will be interested to learn that Walter H. Evans, of Portland, Ore., newly appointed judge of the United States Customs Court, has arrived in New York to take over his new duties. Judge Evans succeeds the late Judge Byron S. White.

* * *

The Board of Directors of the International Paper and Power Company, New York, have declared the regular quarterly dividend of 1¾ per cent on the 7 per cent cumulative preferred stock of the company, and the regular quarterly dividend of 1½ per cent on the 6 per cent cumulative preferred stock of the company, payable April 15 to holders of record at the close of business, April 4.

* * *

Parsons & Whittemore, Inc., of 10 East 40th street, New York, announce that E. R. Southouse, who had been associated with the organization for eight years as manager of the London office, is now located in New York, and has been appointed vice-president in charge of sales. Mr. Southouse has been in the paper industry for twenty-six years and has had a wide experience in Europe and Australia.

* * *

The Robert Gair Company, New York, has been granted an exclusive license under the Papendick patents to manufacture and sell paper bread trays for wrapped, sliced bread in the New England States, New York, New Jersey, Delaware, Pennsylvania, Maryland, West Virginia and part of Virginia. There are no restrictions on the license granted to the Gair company except existing contracts between Papendick and individual bakers in this territory.

* * *

Appointment of John J. F. Anderson of 231 Arlington avenue, Brooklyn, N. Y., as deputy surveyor in charge of the cargo division of the Customs Service at this port has been announced by Thomas W. Whittle, Surveyor of Customs here. Mr. Anderson, who became a deputy surveyor in 1927, will fill the post made vacant by the death of Colonel William S. Conrow. The division of which Mr. Anderson will have charge takes in 717 miles of waterfront extending from the Manasquan River in New Jersey to Poughkeepsie, excluding Perth Amboy and Newark, which are separate ports. The 1,000 Customs inspectors in this district will be under his supervision. Mr. Anderson joined the Customs Service in 1900 as an inspector, and in 1914 was appointed inspector in charge of Hoboken, N. J.

## E. L. Crooker Now With International

J. L. Fearing, vice-president of the International Paper Company, announces that E. L. Crooker, former sales manager of the St. Maurice Valley Paper Company, Ltd., has become associated with the International in connection with news print sales, with headquarters at the New York office, 220 East 42nd street.

## A Regular Evening with a Regular Fellow

THE OLD TIMER GETS UP TO DATE

This ancient stuff I've been telling "you-all" about is all right-enough for inexperienced youngsters but for one who has been wined and dined and danced to distraction among crowned heads and bald heads of Europe, give us Middletown and its suburbs (Dayton, Hamilton and Cincinnati) for real life.

When I came out to Ohio to live I did so because so many presidents come from there that I thought one or two of 'em ought to go there, so there wouldn't be a shortage.

And when I got into the Miami Valley everyone said "do you know Frank Smith—?" If not it appeared that one "didn't belong." So I called on him and then my real education began. I guess Frank Smith is known generally by papermakers, paper dealers and criminals of all kinds too well to need an introduction but I didn't know him until this past month and now I feel that until I met Frank I didn't meet anyone.

Well—Frank's birthday was Tuesday, March 24 and by Saturday the 28th everyone gathered at his home to celebrate the event. They always have parties on Saturday night in the Miami Valley and now that I have attended one I know why! It takes until Monday to recover. About 40 guests—10 entertainers from W. L. W. Studios, Cincinnati and a dozen criminally minded foreigners also from Cincinnati blew into Middletown—rushed Frank and Myrtle and sang such songs as "I want my rib" "It's a great life if you weaken" and other classics, and danced all over the place, but Frank was the star of the program when he sang "When you wake up in the Morning," "Where the morning glories grow," and followed with "Hilee! Hilo!" ad infinitum till the wee small hours.

Myrtle was getting ready for the show when the old timer first looked in and she appeared to be afraid that she would lose the curl out of her hair before the crowd arrived. When she came down fully bespangled—with *those earrings* we had to be introduced.

A Swedish Snorgas table laden with all sorts of food was one of the finest sights we have seen in our young life.

And when we sneaked away about 3 A. M., we soliloquized "How wonderful it is that these Miami Valley people in their simple purity of mind get such full evenings of enjoyment with none of the wickedness of alcoholic stimulants. It shows that Prohibition is a Success doesn't it? I ask you!

I couldn't find out Frank's age. He talks paper like a man with a hundred years of experience, and has read everything ever written, but he plays at a party like a boy in his teens and how can one tell?

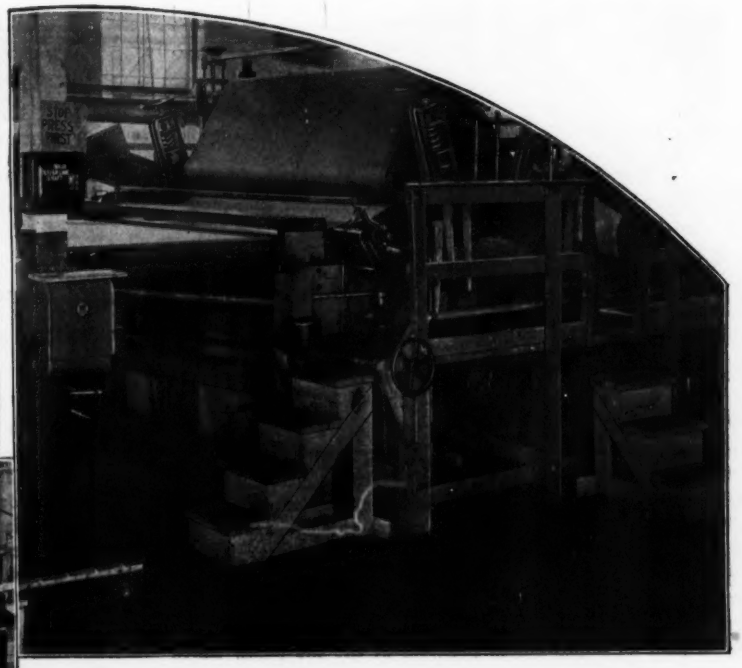
When they sang " Happy Birthday" to him they said a mouthful. I hope he lives another hundred years. If he does and they let me stay in this historic valley I'll learn about paper from him.—J. H. W.

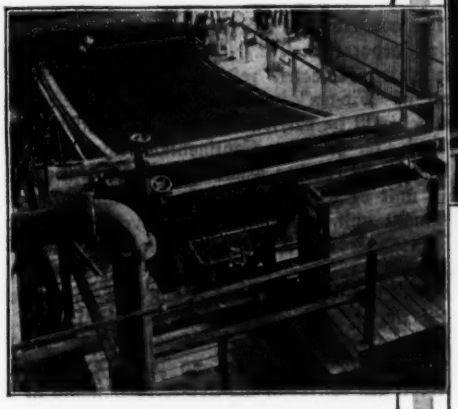
## Test Newspaper Made in 1704

WASHINGTON, D. C., April 1, 1931.—A test of a specimen from the newspaper *The Boston News Letter* published in Boston in 1704, has been made by the Paper Laboratory of the Bureau of Standards. It showed that the paper was composed mainly or wholly of hemp and jute fibers. While the paper had taken on a light brownish color, it was observed that it had not deteriorated to any great extent.

## St. Maurice Appoints A. L. Dawe General Manager

MONTREAL, Que., April 4, 1931—The Directors of the St. Maurice Valley Paper Company, Ltd., announce the resignation of E. L. Crooker. They also announce the appointment of Arthur L. Dawe as general manager.





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THERE ARE now installed Oliver Board Forming Machines with capacity to produce daily close to three quarters of a million feet of insulating board. One company alone has capacity for 300,000 square feet a day.

There is a structure and a finish to this board that makes it stand out. It has the quality that appeals to builders and architects.

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The producer of insulating board seeking to improve his standing in the building materials field should make his board on the Oliver Board Forming Machine.

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T. An Tesch

# CONSTRUCTION NEWS

*A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills*

### Construction News

**Philadelphia, Pa.**—The Paper Manufacturers Company, 501-7 Callowhill street, has concluded arrangements for purchase of plot of land, 64 x 55 feet, in vicinity of its plant at 511-15 Callowhill Street, and will use for future expansion. The company now holds a total frontage on street noted of 172 feet.

**Roanoke Rapids, N. C.**—The mill and business of the Roanoke Fibre Board Company have been acquired by new interests, headed by Curtis Harstromer, Hopewell, Va., and associates, who will take possession at an early date. The new owners plan an improvement program at the the plant, which will be under the management of Uno Frykland.

**Sandusky, Ohio.**—The Hinde & Dauch Paper Company, Sandusky, has approved final plans for a new mill for the production of corrugated paper and paperboard containers at Truro, Nova Scotia. The new plant will be operated by the Maritime Paper Products, Ltd., a subsidiary organization, and it is reported to cost over $100,000 with machinery. It is scheduled for completion in about sixty days.

**Fall River, Mass.**—The Champion Paper Box Corporation, recently organized with a capital of 100 shares of stock, no par value, by Emanuel M. Jaffe, 155 Girard street, Brooklyn, N. Y., and associates, plans operation of a local plant for the manufacture of paper boxes and containers. Mr. Jaffe will be treasurer of the new company; Benjamin H. Whitestone is president.

**El Centro, Cal.**—The Celotex Company, 919 North Michigan avenue, Chicago, Ill., manufacturer of insulating board products, wallboard, etc., is reported to have purchased the Red Island pumice deposit, near the Salton Sea, vicinity of El Centro, and contemplates the construction of a new mill at that location. It is understood that work will be placed under way on initial unit at an early date. Company engineering department will supervise the project.

**Leominister, Mass.**—The Ciel Sales Company, Leominister, recently organized, has begun operations in local building, specializing in the production of refractone paper specialties, and expects to give employment to a sizeable working force.

**New York, N. Y.**—The West Virginia Pulp and Paper Commany, 230 Park avenue, New York, has leased the entire building at 510-14 West Twenty-seventh Street, and will occupy for storage and distributing service. Improvements and alterations will be made in the building at once, and structure occupied as soon as completed.

**Childs, Md.**—The Maryland Paperboard Company, 7 St. Paul street, Baltimore, Md., has work in progress on alterations and improvements in the former mill of the Marley Paper Manufacturing Company at Childs, and will equip for paperboard production. It is expected to have the mill ready for service in July. The company was organized recently. Walter G. Liembach is secretary and treasurer in charge.

**St Helens, Ore.**—The Fir-Tex Insulating Board Company, St. Helens, is working on a sizable production schedule with normal working force, and will hold to this basis for an indefinite period. The company has recently secured an order from the Kelvinator Corporation, 14250 Plymouth street, Detroit, Mich., manufacturer of electric refrigerators, totaling 15,000,000 square feet of "Fir-tex" insulating board, for refrigerator service, and which will be carried out over a period of weeks.

**Ridgefield Park, N. J.**—The Continental Paper Company, River Road, Bogota, N. J., has asked bids in general contract for a new mill unit at Ridgefield Park, consisting of a two-story and basement unit, reported to cost over $50,000, with equipment. Johnson & Wierk, Grand Central Terminal, New York, are architects.

**Dallas, Tex.**—The Otey Envelope Company, 2701 Cedar Springs Street, is arranging for an increase in capital to $55,000 for general expansion.

**Philadelphia, Pa.**—The Penn Card and Paper Company, 20 North Sixth street, has conveyed the five-story building at 408-16 Race street, with one and two-story structures in the rear, recently acquired, to E. Magil. It is understood that the company secured the property for a consideration of about $100,000. The figure at which the transfer was made has not been announced. The Penn Card company is said to be arranging to occupy the property.

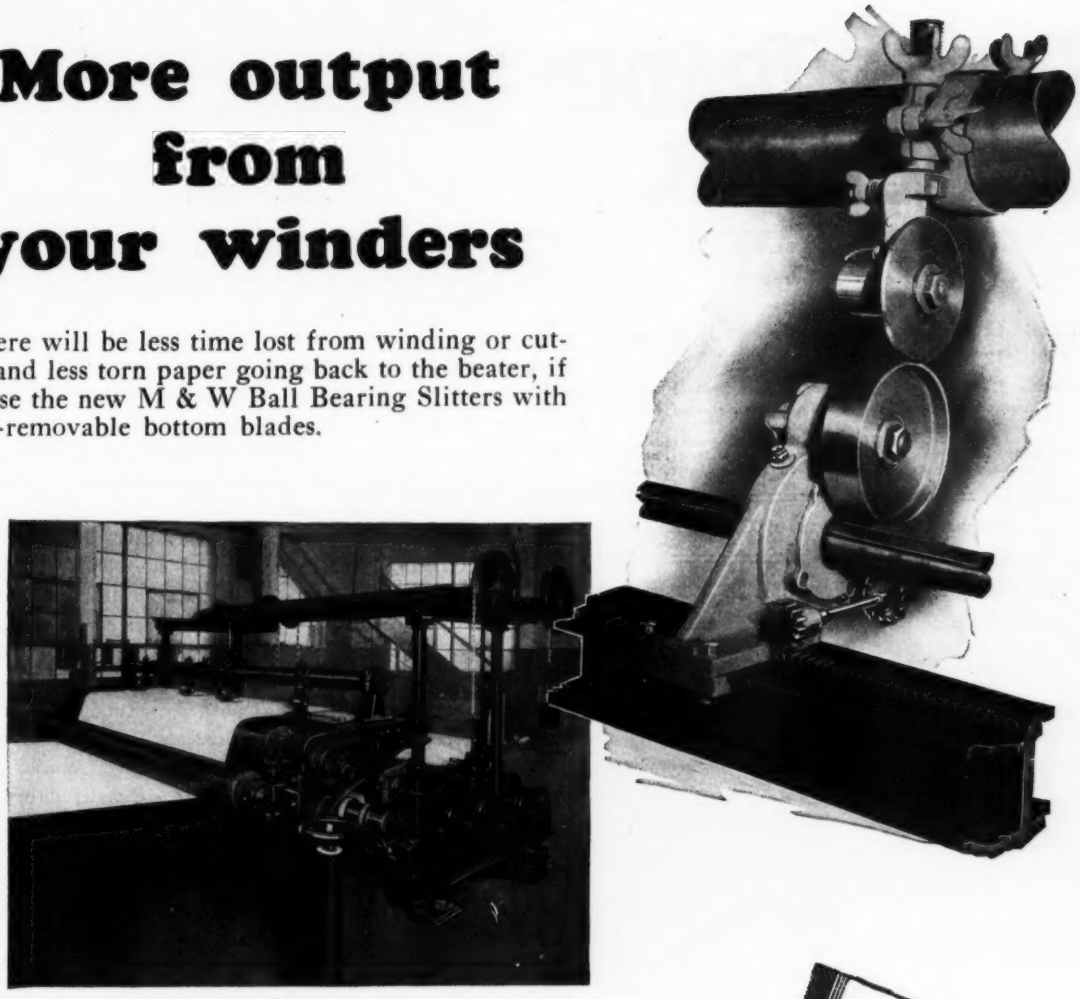
**Kingsport, Tenn.**—Following recent award of general contract to Ridge Construction Corporation, 335 Lewiston Avenue, Rochester, N. Y., for new addition to cellulose mill of the Tennessee Eastman Corporation, Kingsport, sub-contracts have been awarded to Pyle Brothers, Kingsport, for brickwork for the new buildings, and for structural steel to the Converse Bridge and Steel Company, Chattanooga, Tenn. The brickwork is scheduled for completion in May, and other work on the structures will be pushed to completion. The new plant will be one and four-story, 100 x 580 feet, and is reported to cost close to $1,000,000, with machinery. The company is a subsidiary of the Eastman Kodak Company, Kodak Park, Rochester, N. Y.

**Aurora, Ill.**—The Miller-Bryant-Pierce Company, 2225 South River street, Aurora, manufacturer of carbon papers and kindred products, is making ready for the early erection of a new addition to its plant, to be three-story, estimated to cost about $80,000, with machinery. Bids were recently asked on general contract. Frank D. Chase, Inc., 720 North Michigan Avenue, Chicago, Ill., is architect and engineer.

**Hopewell, Va.**—The Tubize-Chatillon Corporation, Hopewell, manufacturer of cellulose rayon products, has work under way on the installation of additional machinery at its plant and production schedules are being increased in different departments. The expansion and betterment program is expected to be completed in May, when the plant is scheduled to be placed on a full manufacturing basis with increased working quotas.

# More output from your winders

There will be less time lost from winding or cutting, and less torn paper going back to the beater, if you use the new M & W Ball Bearing Slitters with quick-removable bottom blades.



Any blade (top or bottom) can be replaced in a few seconds, without disturbing any other slitter, when resharpening is needed. Hence there is no temptation to take a chance on a dull or nicked blade. Simply undo the one large nut on the blade shaft, and the blade comes off.

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Use the new M & W Slitter Parts ahead of the Winders. Use the Slitters in connection with your Cutters.

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# PAPER TRADE JOURNAL

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Henry J. Berger
*Editor*

Ronald G. Macdonald
*Editor Technical Section*

Herbert J. Laughton
*Associate Editor*

Thomas J. Burke, C. A.
*Editor Cost Section*

Reginald Trautschold, M. E.,
*Power Engineering Consultant*

Lynne M. Lamm, *Washington Correspondent*

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## CHEMICAL INDUSTRIES EXPOSITION

The Thirteenth Exposition of Chemical Industries will be held in the Grand Central Palace in New York during the week of May 4 to 9, 1931, and final details of all programs are rapidly taking shape. Fred A. Koch of Dow Chemical Company, president of the Salesmen's Association of the American Chemical Industry has announced that the Chemical Industry Dinner, sponsored by the organization during the week of each Chemical Exposition, this year has been scheduled for Thursday evening, May 7, and will probably be held at the Roosevelt Hotel. As usual the principal speaker will be a prominent individual whom it will be well worth to hear. This dinner always attracts a larger gathering than any other in the chemical field. About twenty of the industry's most active associations, including most of the technical organizations, will cooperate with the Salesmen's Association in urging all of their friends and members to attend this regular feature of Chemical Show week.

The success of these dinners is due primarily to the immense throng of men prominent in the chemical industries who are regularly attracted by the exposition. The great diversity of exhibits of raw materials, laboratory and plant equipment and finished products of the 40-odd chemical industries always assembled at these Expositions has no counterpart elsewhere in the world; and the numbers of chemists and engineers, plant executives and officers of great corporations that come from all parts of the country as well as from the industrial nations of the world, is correspondingly impressive.

They come to keep in close touch with what their industry is doing, to compare competitive equipment which can be used in their plants, and in search of solutions for vexing problems of production. A vast array of equipment is on hand for examination.

To visitors who come to the Exposition year after year, pronounced tendencies in industry are strikingly shown by the exhibits. For example, distilled water has long been used in many laboratory and some industrial processes, but the list grows longer year by year. One exhibitor of water stills lists an astonishing number of points at which his product impringes upon everyday life.

The booth to be occupied by this exhibitor will contain the still used by Read-Admiral Byrd for scientific and photographic purposes on his famous trip to the Antartic. It will contain, also, a full-automatic-controlled distilled water system, consisting essentially of a water still, a storage tank and self-starting-stopping-flushing controls by means of which the still automatically starts operation when the water in storage falls below the pre-determined level, cuts off when the supply is replenished, and then automatically drains the evaporator of sediment.

Other equipment to be shown will range from the most delicate laboratory and scientific instruments up to massive industrial apparatus such as beaters, crushers and pulverizers. One booth will include: a rapid vacuum and pressure pump with a range from a pressure of 20 pounds per square inch down to a vacuum of one ten-millionth of an atmosphere; laboratory balances designed for fast weighing without sacrifice of accuracy, and sensibility of .001 mg, viscosity meters, a surface tension balance; a new Hoag-Millikan Oil Drop Apparatus, and a considerable list of other scientific instruments.

Besides the exhibits, the Students Courses always given at the expositions have come to recognized as one of their most important features. These courses are under direction of Dr. W. T. Read, and a preliminary announcement from Dr. Read gives brief synopses of the three courses for the coming Exposition. The lectures of the first course will extend through Monday afternoon and Tuesday morning; the other two courses will extend through the mornings.

The purpose of the first course, which will be given the afternoon of May 4 and the morning of May 5 is to give a general survey of the field of chemical engineering. It is intended for students who are beginning their work in chemical engineering but who have had none of the formal courses in the subject, and for students who are interested in the chemical industry and have not yet made final decision as to their future course of study.

The second course, to occupy the mornings of May 6 and 7, is for advanced students of chemical engineering and for younger chemical engineers in industry. Its purpose is to impart the point of view held by progressive leaders in this field.

The third course will fill the mornings of May 8 and 9, and is designed for students of chemistry, including advanced undergraduates, graduate students and younger chemists who are still under training in chemical industry.

## PAPER MILL EMPLOYMENT

Employment decreased but payrolls increased in the paper, pulp and paper box industries in February as compared with January according to the Bureau of Labor Statistics, Department of Labor.

Reports were received from 218 paper and pulp mills which gave their January employment at 53,460 decreasing slightly in February to 53,360, a decrease of 0.2 per cent. The weekly pay-

rolls in these same plants on the other hand increased from $1,287,481 in January to $1,338,806 in February, an increase of 4 per cent.

The Bureau also received reports from 309 paper box factories which gave their January employment at 23,983, decreasing in February to 23,662, a decrease of 1.3 per cent. The weekly payrolls in these same plants, however, increased from $504,080 in January to $509,303 in February, an increase of 1 per cent.

## Invention in the Paper Industry

PHILADELPHIA, PA., APRIL 7, 1931.

EDITOR PAPER TRADE JOURNAL:—

You are to be commended upon the excellent editorial "Invention in the Paper Industry" in the March 26 issue of the PAPER TRADE JOURNAL. There are two statements, however, on which many will probably wish to take issue with you. The first is your statement that only the capitalistic system can produce invention. Of course, you are aware of the fact that the Soviet government encourages inventions and has a very successful patent system modelled after our own and that of Germany. The second is that the laws of this country are so fair and just, etc., that if the inventor loses his property it will probably be due to the fact that he is unable to make a proper defense of his rights. The truth of the matter is nearer to the statements made on your editorial page on August 7, 1930, referring to the creation of TAPPI'S Patents Committee. As a matter of fact, our system has developed so many defects and contains so many pitfalls that the merits of the invention and the good intentions of the inventor play very minor roles. A single misstep on the part of the inventor and the dishonest competitor will be allowed to go scot-free with all his spoils.

CHARLES W. REVISE.

## N. J. Niks Goes With Munising Paper Co.

CHILLICOTHE, Ohio, April 6, 1931—Chillicothe is about to lose one of her citizens who has made many friends during his residence here when N. J. Niks leaves for Munising, Mich., on May 1. Mr. Niks who is one of the experts at the Chillicothe Paper Co., has accepted a position with the Munising Paper Co. at Munising, Mich. and will make that his future home after May 1.

Mr. Niks is a studious investigator of his own calling and is rated highly as an expert in the paper business. He has invented several processes which bring him in handsome royalties and is working on others which loom still larger on his horizon.

Mr. and Mrs. Niks have made a niche among friends here that will be felt when they depart. The Chillicothe Paper Co. regrets to lose him but his promotion to the new field is such as to make them waive their own desires in the matter and to wish Mr. Niks godspeed on his journey to newer fields.

## Swedish News Print Market Improves

WASHINGTON, D. C., March 25, 1931—A report to the Department of Commerce states that a better tone is becoming apparent in the Swedish sulphite and news print markets.

Sulphite prices are firmer, and a couple of fairly large sales have been made to the United States for 1931 and 1932 delivery. Canadian competition in the news print market is making itself felt in South America, but two of the larger Swedish mills are reported to have received orders sufficient to keep their mills running on full schedules for the first six months of this year. No improvement is yet noticeable in the sulphite market, and the turnover in sulphite and kraft wrapping papers continues dull. News print production during January totaled 14,376 metric tons a decrease of approximately 2,000 tons compared with the preceding month.

## Box Production for January

Monthly statistics, covering the period from January 1, 1929 to January 31, 1931, inclusive, on production, shipments, etc., of box board, based on reports submitted to the Bureau of the Census by 97 establishments operating 130 plants, are presented in the following table. The capacity data shown below varies according to the normal number of working days in each month.

| Year and Month | Operation | | | Production | | | New Orders | Unfilled Orders (end of month) |
|---|---|---|---|---|---|---|---|---|
| | Inch hours | | Per cent of Capacity | Short Tons | | Per cent of Capacity | | |
| | Capacity | Operated | | Capacity | Output | | Short Tons | |
| 1929 | | | | | | | | |
| Jan. | 12,166,180 | 9,548,914 | 78.5 | 332,202 | 255,795 | 77.0 | 246,126 | 89,643 |
| Feb. | 11,230,320 | 8,661,380 | 77.1 | 306,648 | 233,103 | 76.0 | 233,577 | 89,936 |
| March | 12,188,644 | 9,641,580 | 79.1 | 333,424 | 263,252 | 79.0 | 271,118 | 98,016 |
| April | 12,188,644 | 9,495,901 | 77.9 | 333,424 | 256,486 | 76.9 | 254,216 | 99,610 |
| May | 12,188,644 | 9,641,050 | 79.1 | 333,424 | 266 484 | 79.9 | 252,122 | 88,048 |
| June | 11,719,850 | 9,012,771 | 76.9 | 320,600 | 233,164 | 72.7 | 221,429 | 73,330 |
| July | 12,188,644 | 9,227,606 | 75.7 | 333,424 | 242,265 | 72.7 | 245,457 | 76,091 |
| Aug. | 12,657,438 | 9,805,677 | 77.5 | 346,248 | 265,063 | 76.6 | 269,951 | 80,634 |
| Sept. | 11,251,056 | 8,745,015 | 77.7 | 307,776 | 242,032 | 78.6 | 251,189 | 85,866 |
| Oct. | 12,657,438 | 9,707,460 | 76.7 | 346,248 | 269,611 | 77.9 | 269,300 | 84,237 |
| Nov. | 11,681,450 | 8,689,622 | 74.4 | 320,175 | 241,780 | 75.5 | 219,635 | 66,125 |
| Dec. | 11,681,450 | 6,843,974 | 58.6 | 320,175 | 182,699 | 57.1 | 175,090 | 58,612 |
| Total (year) | 143,799,758 | 109,020,950 | 75.8 | 3,933,768 | 2,951,734 | 75.0 | 2,909,210 | ..... |
| 1930 | | | | | | | | |
| Jan. | 11,691,264 | *8,832,573 | *75.5 | 329,628 | 236,344 | 71.7 | 243,612 | 69,940 |
| Feb. | 10,888,704 | 8,971,760 | 82.4 | 306,432 | 220,014 | 71.8 | 213,181 | 62,134 |
| March | 11,796,096 | 8,643,344 | 73.3 | 331,968 | 229,979 | 69.3 | 225,782 | 58,591 |
| April | 11,796,096 | 8,580,845 | 72.7 | 331,968 | 245,167 | 73.9 | 249,735 | 66,868 |
| May | 11,796,096 | 8,377,741 | 71.0 | 331,968 | 239,186 | 72.1 | 234,448 | 63,237 |
| June | 11,342,400 | 7,841,532 | 69.1 | 319,200 | 221,525 | 69.4 | 220,965 | 58,866 |
| July | 11,796,096 | 7,892,964 | 66.9 | 331,968 | 222,788 | 67.1 | 230,380 | 65,819 |
| Aug. | 11,796,096 | 8,029,756 | 68.1 | 331,968 | 224,391 | 67.6 | 221,840 | 63,518 |
| Sept. | 11,342,400 | 7,907,075 | 69.7 | 319,200 | 228,257 | 71.5 | 226,899 | 61,978 |
| Oct. | 12,249,792 | 8,391,432 | 68.5 | 344,736 | 253,889 | 73.6 | 247,209 | 57,377 |
| Nov. | 10,888,704 | 7,113,895 | 65.3 | 306.432 | *203,381 | *66.4 | 200,199 | 55,534 |
| Dec. | 11,796,096 | *6,260,675 | *53.1 | 331,968 | *176,483 | *53.2 | *173,258 | *53,622 |
| Total (year) | 139,179,840 | 96,843,592 | *69.6 | 3,917,436 | 2,701,404 | *69.0 | 2,687,508 | ..... |
| 1931 | | | | | | | | |
| Jan. | 11,796,096 | 7,451,438 | 63.2 | 331,968 | 209,369 | 63.1 | 209,953 | 55,726 |

| Year and Month | Shipments of boxboard | Stocks of boxboard, end of month | Consumption of waste paper | | Per cent of Capacity | Stocks of waste paper end of month | |
|---|---|---|---|---|---|---|---|
| | | | Capacity | Consumed | | At plants | In transit and unshipped purchases |
| | Short Tons | | Short Tons | | | Short Tons | |
| 1929 | | | | | | | |
| January | 251,812 | 61,721 | 317,980 | 243,404 | 76.5 | 141,389 | 49,115 |
| February | 233,284 | 61,540 | 293,520 | 222,019 | 75.6 | 130,890 | 54,132 |
| March | 263,038 | 61,754 | 319,046 | 246,660 | 77.3 | 142,026 | 51,531 |
| April | 252,622 | 65,618 | 319,046 | 236,150 | 74.0 | 147,427 | 67,736 |
| May | 263,684 | 68,418 | 319,046 | 249,880 | 78.3 | 150,250 | 53,157 |
| June | 236,147 | 65,433 | 306,775 | 232,060 | 75.6 | 156,352 | 55,543 |
| July | 242,696 | 65,004 | 319,046 | 214,574 | 67.3 | 170,745 | 62,967 |
| August | 265,408 | 64,659 | 331,317 | 256,339 | 77.4 | 171,218 | 59,480 |
| September | 245,957 | 60,734 | 294,504 | 231,029 | 78.4 | 175,279 | 87,700 |
| October | 270,929 | 59,416 | 331,317 | 254,163 | 76.7 | 186,806 | 70,020 |
| November | 237,747 | 63,449 | 306,725 | 230,046 | 75.0 | 193,534 | 51,650 |
| December | 182,603 | 63,545 | 306,725 | 172,336 | 56.2 | 197,841 | 49,012 |
| Total (year) | 2,945,927 | ..... | 3,765,047 | 2,788,660 | 74.1 | ..... | ..... |
| 1930 | | | | | | | |
| January | 232,284 | 67,605 | 318,786 | 223,288 | 70.0 | 180,055 | 54,142 |
| February | 220,987 | 66,632 | 296,429 | 216,717 | 73.1 | 179,497 | 54,577 |
| March | 229,325 | 67,286 | 321,126 | 229,969 | 71.6 | 192,957 | 54,629 |
| April | 241,458 | 70,995 | 321,126 | 230,993 | 71.9 | 181,125 | 51,950 |
| May | 238,079 | 72,102 | 321,126 | 232,581 | 72.4 | 185,972 | 34,919 |
| June | 225,336 | 68,291 | 308,775 | 210,793 | 68.3 | 184,451 | 38,241 |
| July | 223,427 | 67,652 | 321,126 | 207,596 | 64.6 | 175,645 | 43,393 |
| August | 224,141 | 67,902 | 321,126 | 215,879 | 67.2 | 187,508 | 36,108 |
| September | 228,439 | 67,720 | 308,775 | 223,071 | 72.2 | 165,499 | 45,960 |
| October | 251,810 | 69,799 | 333,477 | 228,588 | 68.5 | 177,486 | 34,910 |
| November | 202,042 | *71,138 | 296,429 | 190,502 | 64.3 | 184,598 | 30,649 |
| December | *175,170 | *72,451 | 321,126 | *162,528 | 50.6 | *201,597 | *34,292 |
| Total (year) | 2,692,498 | ..... | 3,789,427 | 2,572,445 | *67.9 | ..... | ..... |
| 1931 | | | | | | | |
| January | 207,849 | 73,971 | 321,126 | 195,797 | 61.0 | 192,034 | 34,470 |

* Revised.

## To Improve Rainier Mill at Shelton

PORTLAND, Ore., April 4, 1931—Following the recent decision of the Rainier Pulp and Paper company to continue its location at Shelton, Wash., after basis for settlement of a suit which involved the company and oyster-bed owners in the district, had been reached, the paper company announced that it will not only remain in Shelton but will spend $458,000 to enlarge the plant. Shelton residents will raise $166,000 and the money will be used to settle suits of Oakland bay oystermen. The Rainier Pulp and Paper company will settle other suits pending against it for alleged stream pollution in the oyster district.

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CHEMICALS
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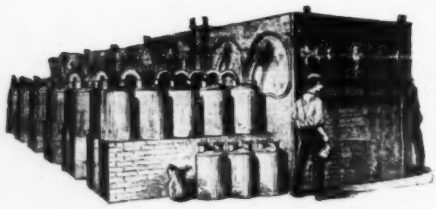
# THE BEST MATERIALS ARE THE ONLY ONES

*"FURTHER concentration of the acid, after it has left the leaden chamber, is effected by two stages, first in open lead pans, set on iron plates to receive the heat of the furnace, and then in platinum stills.*

*". . . These platinum stills are beautiful to look at, but so very expensive that many efforts have been made to find a substitute for them. In some establishments, glass has been tried for this purpose, but its constant liability to breakage has prevented its general adoption."*



• • •

HERE is evidence that Kalbfleisch spares no expense to make its name a "symbol for quality chemicals." And this was true even long before this story concerning the platinum stills at the "Works of Martin Kalbfleisch" appeared in an 1880 issue of Scientific American . . . for the Kalbfleisch Corporation was then fifty-one years old.

Fifty further years of remarkable progress in many directions of chemical manufacture have seen no deviation from this policy that the best materials are the *only* ones for producing Kalbfleisch chemicals. Time has increased rather than diminished adherence to this principle . . . and the confidence of customers in the Kalbfleisch name has increased in direct proportion.

## The KALBFLEISCH Corporation

535 Fifth Avenue, New York, N. Y.

ERIE, PA. KALAMAZOO, MICH. CHATTANOOGA, TENN. KOKOMO, IND. CAMP VERDE, ARIZ.
ELIZABETH, N. J. WATERBURY, CONN. DeQUINCY, LA. CINCINNATI, OHIO JOLIET, ILL.

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

# Current Paper Trade Literature

## Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts and Bibliography of the Technical Association of the Pulp and Paper Industry

Clarence J. West, Chairman

**For photostatic copies of articles appearing in the Abstracts Section, address the chairman of the Abstracts Committee, Dr. Clarance J. West, National Research Council, 21st and B Streets, Washington, D. C. The charge for this service is as follows: 9 x 11 inches, 18 cents each; 18 x 11 inches, 35 cents each; 22 x 18 inches, 70 cents each; minimum charge, 50 cents. Copies of United States patents may be obtained from the U. S. Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.**

### Machinery

**Press Roll Drive.** Walter W. Metcalf and Joesph Brown. U. S. pat. 1,767,088, June 24, 1930.—The purpose of the invention is to provide means for positively driving both upper and lower rolls of a press at the same peripheral speed, irrespective of differences in diameter. This is accomplished by driving the rolls through a differential gear. Power is transmitted to a bevel gear which is secured to the differential housing. Journaled within the housing on sub shafts are six planetary pinions, meshed in pairs. One pinion of each pair meshes with the rear sun gear, while the other pinion is geared to the front sun gear. The rear sun gear is keyed to a solid inner shaft and the front sun gear is keyed to a hollow cylindrical shaft rotating around the solid inner shaft. The outer shaft is keyed to a spur gear which drives a spur gear keyed to the shaft of the upper press roll. The inner solid shaft is directly connected to the lower press roll.—A.P.-C.

**Vat Cylinder Paper Machines.** Howard Parker assignor to Brown Co. U. S. pat. 1,766,000, June 24, 1930.—The object of the invention is to facilitate the production of pulp webs the thickness of which can be locally controlled so as to obtain a substantially uniform thickness across the web, or to obtain a web having any desired variation of thickness from one edge to the other. This is effected by controlling at various points the agitation of the stock adjacent to the cylinder, which may be done by directing the flow of stock in the vat so as to vary its motion locally against the surface of the cylinder. The stock is fed into the vat by means of a pipe opening into the bottom of the vat, and in order to obtain a proper distribution of the stock, a hollow, rotating, perforated roll is mounted in the vat, baffles being provided so that all the stock is forced to pass through the rotating roll. The means for locally controlling the thickness of the pulp mass deposited on the cylinder consists of a series of separated channels or ducts which project the stock against the portion of the surface of the cylinder-mount which is about to emerge from the liquid in the vat. Each duct is provided with a gate so that the amount of stock delivered through the ducts can be controlled individually.—A.P.-C.

**Cylinder Paper Machine.** J. J. Hinde. Eng. pat. 330,617, Jan. 14, 1929.—In cylinder machines suitable for forming thick sheet material, the pulp is fed to a partially closed vat from a pressure box and is collected between a screen passing around a flanged cylinder and a second screen converging towards the first screen, the sheet thus formed passing on to a suitable carrier or platform from which it is taken, dried and cut into suitable sheets or strips. A fluid tight joint is made between the vat and the first screen by means of a roll having grooves engaging the cylinder flanges and a surface for engaging the screen.—A.P.-C.

**Drier Felt Seams.** M. J. Argy. Paper Mill 53, No. 44, 14, 17 (Nov. 1, 1930).—The use of a Talon or Hookless Fastener (Zipper) seam on cotton or asbestos drier felt has been found to eliminate practically all seam troubles and to increase considerably the useful life of the felt, provided it was made of suitable width and tensile strength for drier felt service.—A.P.-C.

**Few Facts About Paper Drying.** Cal Barry. Paper Industry 12, 272-274 (May, 1930).—A brief discussion of factors governing the evaporative capacity of drying cylinders and of the importance of proper ventilation.—A.P.-C.

### Pulp Treatment

**Process and Machine for Thickened Pulp.** Anton J. Haug. U. S. pat. 1,756,194 (April 29, 1920).—The pulp is fed inside a rapidly rotating screening drum, the inlet being provided with a stationary baffle plate or distributor to direct the pulp outwards toward the screening drum. The centrifugal force makes the water pass through the screening surface and builds up a layer of pulp inside the drum. A revolving scraper inside the drum, and having a suitable clearance from the drum surface, is rotated at a slightly higher speed than the drum and in the same direction, so as to plow up the pulp and force it along the surface of the screen to the discharge end. By properly adjusting the relative speeds of the screen and scraper, the rate of discharge of the pulp, the thickness of the pulp layer on the inside of the drum and the consistency of the thickened pulp can be regulated.—A.P.-C.

**Elimination of "Dirt" from Paper Stock.** R. H. Clapperton Proc. Tech. Sect. Paper Makers' Assoc. 10, 341-354 (1930).—A

summary of the methods employed for the removal of dirt from raw materials, half-stuffs and pulps is given. Centrifugal separation of beaten pulps is advocated, and the operation of this method by means of the Erkensator is described at length. —A.P.-C.

**Saving White Water.** M. J. Argy. Paper Mill 53, No. 18, 18 24 (May 3, 1930); World's Paper Trade Rev. 93, 2260, 2262 (June 29, 1930).—A brief description of the closed white-water system devised at the Cliff Paper Co.'s mill, making groundwood and hanging and colored specialties. It consists essentially of 3 inclined green savealls, one for each machine and one for the pulp mill water, which recovered about 40 per cent of the solids in the white water, while the white water passing through the savealls could be used satisfactorily on all the showers except for the couch jacket. The closing of the white water system resulted in a considerable reduction in the steam consumption, gave a sheet that was more uniformly closed, and reduced the tendency of the showers to make light streaks in the sheet, all of which is attributed to the higher temperature of the stock going on to the wire.—A.P.-C.

**Process of Production Fiber of High Alpha-Cellulose Content.** George A. Richter assignor to Brown Co. U. S. pat. 1,774,403, (Aug. 26, 1930).—Raw pulp is digested at relatively low temperature in an alkaline liquor under oxidizing conditions, and then digested at a high temperature in the same liquor. —A.P.-C.

**Suction Cell Filter.** Anon. Paper Maker & Brit. Paper Trade J. International No. 70, 72 (1930).—This filter is a modification of the standard filter drum, using the standard filter method of cake discharge, namely, reinforcement of the filter cake. The modifications are designed to give ample means of taking care of the effluent and of devoting the major portion of the cycle to filtration. The vat is designed so that as high as 75 per cent submergence of the vacuum cylinder is obtained. The drum is divided into 24 or more compartments with their division strips located on the periphery of the drum. The backing wire and covering wire enclose the entire cylindrical surface, supported by a special spiral wire drainage which gives perfect support and practically no restriction to the flow of water. Each compartment is connected through a number of outlets to a large drainage manifold. The machine is equipped with two collecting rings or valves, alternate manifolds being connected to the same valve. The manifolds are built into the spiders on the end of the cylinder and then into the collecting ring, which is a packed valve, instead of a metal-to-metal fit, thus eliminating leakage and wear. Parallel strings, on about 0.5-in. centers, are carried around the vacuum cylinder close to the covering wire so that the pad of stock forms on the wire with the strings embedded therein. When the valve cuts off the vacuum, the strings lift the stock from the cylinder, carrying it to the discharge roll in sheet form. After the sheet of stock is discharged, the strings pass through aligning combs as they return to the cylinder. The merits of the machine, either as decker or as save-all, are discussed.—A.P.-C.

**Continuous Vacuum Filters in Closed White Water Systems.** A. O. Bragg. Paper Trade J. 91, No. 11, 65 (Sept. 11, 1930).—A brief discussion of their advantages.—A.P.-C.

**Process and Apparatus for the Purification of Wood Pulp.** Papeteries Navarre. Fr. pat. 663,012; Eng. pat. 325,570.—The invention provides a process which is claimed to give a product containing 97 to 98 per cent of alpha-cellulose, even from unbleached pulp. It comprises the following operations: (1) A mechanical treatment (screening on an inclined screen with simultaneous spraying with strong jets of water) to remove the medullary rays which have a high lignin content, fiber fragments consisting of more or less degraded cellulose which are unsuitable for the manufacture of cellulose esters, and various impurities such as silica, calcium resinate, neutral calcium sulphite, hydrated from oxide, etc., which adhere strongly to the fibers. (2) A chemical treatment comprising: (a) elimination of the alkaline-earth salts contained in the pulp; this may be obtained merely by washing with pure water, free from alkaline-earth salts; but if it is desired to obtain directly a very white cellulose, the washing may be preceded by an acid treatment with a very dilute solution of sulphuric or hydrochloric acid; (b) solubilization of all the substances accompanying the alpha-cellulose, which is obtained by the action of a solution of pure caustic soda which is continually renewed during the whole operation, the cellulose being in contact with a solution of absolutely pure caustic soda at the end of the treatment; (c) washing of the purified pulp with water free from alkaline-earth salts; (d) bleaching, if necessary, with about 1 to 3 per cent of bleaching powder; (e) removal of the mineral salts by treatment with an acid solution at a pH such that there is minimum adsorption of the mineral salts by the cellulose. In the case of soda pulp the alkaline treatment is preceded by an oxidizing treatment with about 10 per cent of bleaching powder. The apparatus described in the patent consists of a series of tanks connected by piping through which the alkaline liquor can be circulated, so that the almost completely purified cellulose is in contact with the fresh liquor, while the freshly-charged pulp is first treated with the almost spent liquor. The alkaline treatment can be considered as complete at the end of 45 to 60 hours. For sulphite pulp 4 to 12 per cent of caustic soda (on the weight of the pulp) is used, at a concentration of about 4 per cent and at a temperature of 70 to 80 degrees C. For soda pulp, a cold 10 per cent caustic soda solution is used —A.P.-C.

**Forced Vapor Circulation in Paper Machine Driers.** Anon. Pulp Paper Mag. Can. 30, 155-156, 174 (Aug. 7, 1930).—A brief description of the Fulton system and how it works.—A.P.-C.

**Loop Drier.** Alpheus O. Hurxthall assignor to Proctor and Schwartz, Inc. U. S pat. 1,755,006, April 15, 1930.—The invention provides means for automatically placing or dropping a series of poles or rollers successively on the sheet between pairs of adjacent loop-carrying rolls carried on a suitable conveyor. Each of these rollers at all times assume a position in the bottom of the respective loop, and is of such weight as to place the material under sufficient tension to cause the loops to form without wrinkling the material. The tension thus produced stabilizes the loops so that during the formation and extraction of the loops and during the drying process each loop hangs free from contact with adjacent loops, thereby permitting the top rolls to be spaced closer together than usual and permitting the drier to be made shorter for a given number of loops than is otherwise possible. Stabilization of the loops also permits the air in the drier to be circulated at a higher velocity than is otherwise possible. The tension rollers in the bottom of the loops produce sufficient friction between the material and supporting rolls and between the material and the tension rollers to cause the material to move relatively to the rolls when the supporting rolls are rotated, so as to prevent "stick marks."—A.P.-C.

**Forced Vapor Circulation in Paper Driers.** Anon. Paper Trade J. 91, No. 18, 171,173 (Oct. 30, 1930).—A brief description of the Fulton forced vapor circulating system and its operation, with a discussion of merits.—A.P.-C.

**Fabric for Drier Felts.** Eduard von Asten and Harold N. Hill assignors to Von Asten et Cie. U. S. pat. 1,753,845, April 8, 1930.—A fabric for drier felts is made up of textile elements including agave.—A.P.-C.

**Slitting Paper Webs.** W. W. Triggs from Cameron Machine Co. Eng. pat. 332,056.—A cutting disk cooperates with a glass-hard backing-roll to score the paper web. The cutter is held between cheeks mounted on trunnions on a suitable holder. The cutter is mounted for rotation between the cheeks by narrow ball bearings on a shaft secured to the cheeks. Side play is prevented by antifriction washers which may contain antifriction balls.—A.P.-C.

## Patent Searches

It is usual before filing an application for a patent to have a search made of the records of the Patent Office to determine the advisability of filing the application. The results of such preliminary investigation give the inventor some idea of the scope of invention and enable him to more intelligently prepare papers and prosecute the application. Though the Patent Office has copies of most patents issued in the more important countries of the world and of many technical publications, preliminary searches are usually confined to patents granted in this country. The reason for this is that it is often less expensive to file the application than to make a thorough and exhaustive investigation. In many cases the searches are so cursory in their nature that they do not reveal the closest prior art. As a result the inventor is frequently disappointed by having his application finally rejected or his patent held invalid on references that escaped the attention of the searcher.

A prominent inventor has stated "the inventor must not jump at the conclusion that an idea, because his own, must be new. In a vast majority of cases it is old and either worthless, obsolete or public property. Vast sums have been spent and thousands of lives devoted to the more or less secret pursuit of chimerical inventions, and a little investigation in the right direction would have been shown to lead to nothing but pathetic disappointment. All this is due to the mistaken notion that anyone can hit upon something valuable in the way of an invention, without first becoming fully informed concerning the thing sought to be improved and with the state of the art."

The logical time to make the prior art investigation is before starting the research work to solve a given problem. A search should also be made before acquiring an interest in a patented or unpatented invention and before deciding what action to take in a threatened infringement suit.

A search before serious work is begun on a new invention will give invaluable information as to the state of the art, show what mistakes to avoid and suggest improvement. It will reveal subject matter that may be freely used; i. e., disclosures of expired and foreign patents and unclaimed subject matter of domestic patents. It will also show what is covered by live patents and so indicate the things which should be avoided as not open to the public. Often it is possible to obtain such patents, which are not being worked, for a nominal sum and thus procure a ready-made entrance into the industry. At any rate, a search helps to determine the tendency for future development and serves to guide research work so that it will bring productive results. By means of the investigation, research work may be guided so that it will be combined with the work of others outside of the inventor's organization and directed away from fields that are impeded by hostile patents.

Many inventors make the mistake of limiting their investigations of the prior art to devices that have actually been on the market. They forget that until very recently engineers were exceedingly slow in taking up new ideas for the improvement of their fields. Thus many valuable contributions to the arts have been disclosed in patents and printed publications and have never been noticed by inventors and engineers. Hence they have been lost as far as their practical value to the arts is concerned. Frequently one of these ideas is rediscovered and a search indicates it to be old. In a large proportion of instances the patent literature is the only source of information as to these "lost" inventions.

An investigation may well start with text books and technical articles covering the art in question. Thus, it is possible in a relatively short time to gain a comprehensive history of the development of the art, which will not only disclose basic patents but will also indicate what foreign patented art offers the most fertile field of search. Reference to textbooks and periodical literature may be obtained from Chemical Abstracts and West's and Berolzheimer's Bibliography of Bibliographies on Chemistry and Technology. The worker in the paper industry will also do well to consult West's Bibliography of Papermaking.

The search through the technical literature may well be made by the research worker himself as he is usually familiar with his own art. He should, however, resort to competent technicians and patent attorneys for the investigation of the patented art as they are more familiar with the language of patents and the classification of the Patent Office. They can also examine the file wrappers of the most pertinent patents. Much valuable information of the state of the art and the scope as well as probable validity of patents can be gained in this manner.

No matter how thorough and exhaustive a prior art investigation may be, it cannot uncover the subject matter of pending patent applications. They are maintained in the strictest secrecy by the Patent Office until the patent is finally granted. However, since patents are issued more promptly abroad than in this country, it is often possible by making a careful search of the foreign art, to get some idea of competitor's pending applications.

EDITOR'S NOTE:—This is one of a series of contributions from the Patents Committee of the Technical Association of the Pulp and Paper Industry. All the others have appeared in the PAPER TRADE JOURNAL.

## TAPPI Notes

Members of TAPPI may obtain a separate index to the Technical Section of the Paper Trade Journal, Vol. 91, (July to December, 1930) by writing to the Secretary of TAPPI, 370 Lexington avenue, New York.

The Foreign Paper Mills, a TAPPI company member and distributor of paper testing instruments, is now located at 314 Broadway, New York.

M. B. Shaw, George W. Bicking, and M. J. O'Leary are the authors of "The Paper Making Properties of Phormium Tenax (New Zealand Flax)" in the March 31st issue of the *Bureau of Standards Journal of Research*, (Vol. 6, No. 3).

Elwin J. Owens has resigned his position as beater room superintendent at the Geo. W. Wheelwright Paper Company, and has made no definite plans for the future. He may be reached at 12 Foster Court, Leominster, Mass.

H. G. Burrill has left the organization of John D. Hamilton and has established his own consulting engineering business at 2011 Chelsea Terrace, Baltimore, Md., where he will specialize in paper mill and steam plant problems.

The Lake States Section of TAPPI will hold a joint meeting on April 11 at Menasha, Wis., with the Fox River Valley Club of Printing House Craftsmen. Ronald Drake of the Marathon Paper Mills will read a paper entitled, "Problems Encountered in Manufacturing Paper to Meet the Particular Requirements of the Printing Trade." A representative of the Craftsmen's Club will discuss problems encountered in printing on various grades of paper.

Research Paper No. 278, "Critical Study of the Bursting Strength Test for Paper," by F. T. Carson and F. C. Worthington has just been issued and is obtainable from the Superintendent of Documents, Washington, D. C., for ten cents.

## W. R. Cloud Leaves Chicago Coated Board Div.

CHICAGO, Ill., April 6, 1931.—Walter R. Cloud, general superintendent of the Chicago Coated Board Division of the Container Corporation of America, resigned that position, effective March 31. Mr. Cloud had successfully operated this mill for 18 years, originally for the Robert Gair Company and later for the present owners in the manufacture of all grades of box boards. Mr. Cloud has several propositions under consideration, but will not decide what he will do until after he has enjoyed a short vacation.

He came to the Chicago Coated Board Division from the Ohio Box Board Company at Rittman, Ohio, September 1, 1913. He has made many friends in the industry who will wish him success in whatever he undertakes in the future.

# Grease Resistance of Paper*

By Roger C. Griffin [1]

During the past year samples of representative grades of greaseproof papers have been obtained from manufatcurers and submitted for coöperative tests to members of the sub-committee. These papers are designated as follows:

### Papers Tested

*A* 40 pound supercalendered white greaseproof, about 11 cents per pound
*B* 30 pound white greaseproof, about 10 cents per pound
*C* 25 pound supercalendered manila semi-greaseproof, about 8.5 cents per pound
*D* 20 pound vegetable parchment
*E* 25 pound vegetable parchment
*F* 30 pound vegetable parchment, medium grade
*G* 40 pound vegetable parchment, medium grade
*H* 40 pound special lard liner parchment, highly greaseproof
*I* 50 pound vegetable parchment

All of the papers were first tested in the laboratory of Arthur D. Little, Inc. by two different methods and subsequently were divided into lots and part of them sent to each of the various collaborators.

### Testing Methods

The collaborators were requested to use the following methods in testing these papers:

(a) Turpentine Method: Cut at least 12 pieces of the paper, uncreased, about 4 inches square and place each on the lower part of a piece of clean white paper about 5 by 7 inches, flat on the table. Place about 2 grams of fairly coarse sand on the center of each test sheet so as to give a low pile about 1 inch in diameter. Note the time and with a medicine dropper or piece of glass tubing place several drops of turpentine, previously colored deep red with an oil-soluble color, on the piles of sand. Then invert a small watch glass over each sand pile; slide the test sheets back horizontally from time to time, taking care not to disturb the watch glass or the sand; examine the under white paper carefully for spots of color from the turpentine; then slide the sample sheet forward into position again. As soon as the first spot of color appears under any sheet, note the total time elapsed in minutes and fractions of a minute and record as Initial Penetration.

(b) Red Oil *(Oleic Acid)* Method: A rectangular piece of plate glass about 10 by 16 by ¼ inch in size is adjusted in a level horizontal position about 3 inches above a similar sized mirror placed on a table. On the surface of the plate glass is placed a rectangular strip of filter paper of the same grade as Munktell's Swedish No. 0 or Schleicher & Schull's No. 589 filter paper and of slightly larger size than the strip of the paper to be tested. The latter strip of paper should be about 10 inches long by 2 inches wide and should be placed on the filter paper. Six polariscope tube metal caps (or metal rings of similar shape and weight) are placed at equal intervals from each other on the paper to be tested and one drop (about 0.03 cc.) of oleic acid (U.S.P.IX) is dropped on the paper through the hole in each cap successively by means of a small pipette or medicine dropper which delivers the proper sized drops. The temperature of the oleic acid should be between 20 and 25 deg. C. during the testing. The exact time to seconds that each drop of oleic acid is dropped on the paper is recorded, and the exact time to seconds that the first trace of oil appears on the filter paper below, as seen by the reflection of the underside on the mirror, is also noted. The difference between the two times gives the initial oil penetration for each spot of the paper tested.

This operation is repeated four times, using a different representative strip of the paper to be tested each time; and then the 24 results obtained are averaged to obtain the initial oil penetration of the whole paper which is expressed finally in minutes and decimals.

In low-grade papers where there is a lack of uniformity in the paper and the time of penetration of each drop shows a wide variation, it is best to repeat the process again, obtaining the average of 48 tests. With machine-glazed papers both sides should be tested and results averaged.

The turpentine method is essentially the same as that used in previous work of the sub-committee. The red oil method is in use in the U. S. Customs Laboratory in New York City.

### Testing Liquids

One batch of each of the testing liquids was prepared and portions of them sent to each of the collaborators. For the turpentine test anhydrous commercial turpentine was colored a deep red with an oil-soluble dye. For the red oil test U.S.P. oleic acid was colored with the same red dye. The characteristics of the red oil have been described in a previous report[2].

### Results of Tests

The results of the individual tests on each sample are given in Table I, and in Table II are given the average results of the tests on each paper.

[2] Tech. Assoc. Papers XIII, 36.

**Table I—Sample A**

TURPENTINE PENETRATION, MINUTES

| Test | Little | J. B. Clarke | Wehmer | H. A. Smith | Carson | DesAutels |
|---|---|---|---|---|---|---|
| 1 | 41 | 22 | 60+ | 10 | 43 | 31.5 |
| 2 | 42 | 65 | " | 15 | 42 | 37.5 |
| 3 | 44 | 72 | " | 15 | 49 | 17.2 |
| 4 | 43 | 63 | 120+ | 22 | 25 | 24.9 |
| 5 | 64 | 70 | " | 22 | 53 | 11.2 |
| 6 | 70 | 45 | " | 22 | 42 | 23.8 |
| 7 | 15 | 51 | .. | 25 | 23 | 18.0 |
| 8 | 51 | 60 | .. | 26 | 28 | 21.9 |
| 9 | 65 | 180 | .. | 27 | 26 | 21.3 |
| 10 | 42 | 180 | .. | 29 | 34 | 9.0 |
| 11 | 70 | 75 | .. | 27 | 38 | 18.6 |
| 12 | 20 | 70 | .. | 105 | 40 | 37.3 |
| 13 | 30 | .. | .. | .. | .. | 34.6 |
| 14 | 10 | .. | .. | .. | .. | 19.8 |
| 15 | 45 | .. | .. | .. | .. | 10.2 |
| 16 | 150 | .. | .. | .. | .. | 32.6 |
| 17 | 73 | .. | .. | .. | .. | 15.1 |
| 18 | 70 | .. | .. | .. | .. | 40.5 |
| 19 | 75 | .. | .. | .. | .. | .. |
| 20 | 70 | .. | .. | .. | .. | .. |
| 21 | 45 | .. | .. | .. | .. | .. |
| 22 | 90 | .. | .. | .. | .. | .. |
| 23 | 95 | .. | .. | .. | .. | .. |
| 24 | 105 | .. | .. | .. | .. | .. |
| Ave. | 59 | 79 | 120+ | 28.8 | 36.9 | 23.6 |
| Max. | 150 | 180 | ... | 105 | 53 | 40.5 |
| Min. | 10 | 22 | .. | 10 | 23 | 9.0 |

RED OIL PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson | DesAutels |
|---|---|---|---|---|---|
| 1 | 240+ | 300+ | 150 | 1020 | 2520 |
| 2 | 225 | " | 180 | 900 | 2560 |
| 3 | 120 | " | 180 | 1140 | .... |
| 4 | 180 | " | 210 | 1080 | .... |
| 5 | 240+ | ... | 210 | 1380 | .... |
| 6 | 330 | ... | 210 | 1440 | .... |
| 7 | 360+ | ... | 240 | 960 | .... |
| 8 | 120 | ... | 270 | 1020 | .... |
| 9 | 240 | ... | 270 | 1140 | .... |
| 10 | 360 | ... | 270 | 1140 | .... |
| 11 | 300+ | ... | 300 | 1200 | .... |
| 12 | 380 | ... | 360 | 1200 | .... |
| 13 | 360+ | ... | 360 | 600 | .... |
| 14 | 300 | ... | 360 | 660 | .... |
| 15 | ... | ... | 390 | 840 | .... |
| 16 | ... | ... | 390 | 720 | .... |
| 17 | ... | ... | 390 | 1020 | .... |
| 18 | ... | ... | 420 | 1020 | .... |
| 19 | ... | ... | 480 | 720 | .... |
| 20 | ... | ... | 480 | 660 | .... |
| 21 | ... | ... | 480 | 660 | .... |
| 22 | ... | ... | 480 | 720 | .... |
| 23 | ... | ... | 480 | 780 | .... |
| 24 | ... | ... | 480 | 960 | .... |
| Ave. | 268+ | 300+ | 335 | 958 | 2540 |
| Max. | ... | ... | 480 | 1440 | ... |
| Min. | 120 | ... | 150 | 600 | .... |

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y. Feb. 17-19, 1931. Report of Sub-Committee on Grease Resistance of Paper. Contribution of the Paper Testing Committee

[1] Member TAPPI, Chairman of Sub-Committee on Grease Resistance. Director of tests, Arthur D. Little, Inc., Cambridge, Mass.

## Table I—Sample B

TURPENTINE PENETRATION, MINUTES

| Test | Little | J. B. Clarke | Wehmer | H. A. Smith | Carson | DesAutels |
|---|---|---|---|---|---|---|
| 1 | 32 | 9.0 | 11.0 | 0.5 | 2.5 | 1.3 |
| 2 | 40 | 10.5 | 11.5 | 0.7 | 3.5 | 1.0 |
| 3 | 45 | 13.2 | 18.3 | 0.8 | 2.5 | 0.8 |
| 4 | 50 | 14.0 | 11.0 | 1.0 | 5.0 | 4.1 |
| 5 | 30 | 23.5 | 15.5 | 1.5 | 5.0 | 1.3 |
| 6 | 35 | 18.0 | 12.5 | 1.5 | 5.5 | 2.6 |
| 7 | 40 | 23.5 | 16.0 | 1.8 | .75 | 1.6 |
| 8 | 45 | 25.2 | 12.5 | 2.0 | .75 | 1.0 |
| 9 | 20 | 22.0 | 11.5 | 2.3 | 5.25 | 6.5 |
| 10 | 30 | 20.0 | 13.5 | 2.5 | 5.5 | 2.5 |
| 11 | 40 | 15.5 | 15.0 | 5.3 | 5.0 | 2.9 |
| 12 | 50 | 21.0 | 11.5 | 6.0 | 5.75 | 1.7 |
| 13 | 40 | ... | ... | ... | ... | 3.7 |
| 14 | 45 | ... | ... | ... | ... | 2.2 |
| 15 | 30 | ... | ... | ... | ... | 1.3 |
| 16 | 40 | ... | ... | ... | ... | 1.2 |
| 17 | 20 | ... | ... | ... | ... | 3.0 |
| 18 | 30 | ... | ... | ... | ... | 3.8 |
| 19 | 25 | ... | ... | ... | ... | ... |
| 20 | 35 | ... | ... | ... | ... | ... |
| 21 | 30 | ... | ... | ... | ... | ... |
| 22 | 50 | ... | ... | ... | ... | ... |
| 23 | 55 | ... | ... | ... | ... | ... |
| 24 | 45 | ... | ... | ... | ... | ... |
| Ave. | 37.6 | 19.0 | 13.3 | 2.2 | 3.9 | 2.6 |
| Max. | 55 | 25.2 | 18.3 | 6.0 | 5.75 | 6.5 |
| Min. | 20 | 9.0 | 11.0 | 0.5 | .75 | 0.8 |

RED OIL PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson | DesAutels |
|---|---|---|---|---|---|
| 1 | 60 | 25.3 | 15 | 37 | 129.5 |
| 2 | 75 | 13.5 | 15 | 78 | 58 |
| 3 | 115 | 36.2 | 20 | 54 | 56.5 |
| 4 | 95 | 28.8 | 35 | 80 | 132 |
| 5 | 60 | 26.0 | 35 | 36 | 86 |
| 6 | 75 | 25.0 | 35 | 75 | 46 |
| 7 | 70 | 28.7 | 60 | 25 | 156 |
| 8 | 90 | 26.5 | 60 | 50 | 99 |
| 9 | 55 | ... | 65 | 50 | 117 |
| 10 | 22 | ... | 65 | 50 | 44.5 |
| 11 | 95 | ... | 80 | 60 | 44 |
| 12 | 80 | ... | 90 | 60 | 86 |
| 13 | 40 | ... | 90 | 53 | 117 |
| 14 | 45 | ... | 90 | 45 | 65 |
| 15 | 60 | ... | 90 | 77 | 137 |
| 16 | 70 | ... | 105 | 90 | 96 |
| 17 | 55 | ... | 120 | 94 | 93 |
| 18 | 21 | ... | 120 | 133 | 83 |
| 19 | 30 | ... | 120 | 158 | 64 |
| 20 | 40 | ... | 120 | 100 | 63 |
| 21 | 25 | ... | 150 | 159 | 32 |
| 22 | 50 | ... | 150 | 36 | 16 |
| 23 | 45 | ... | 160 | 126 | 63 |
| 24 | 70 | ... | 150 | 100 | 42 |
| Ave. | 60 | 26.4 | 85 | 76 | 80.2 |
| Max. | 115 | 36.2 | 160 | 159 | 156 |
| Min. | 21 | 13.5 | 15 | 25 | 16 |

## Table I—Sample C

TURPENTINE PENETRATION, MINUTES

| Test | Little | J. B. Clarke | Wehmer | H. A. Smith | Carson | DesAutels | Randall |
|---|---|---|---|---|---|---|---|
| 1 | 5.75 | 3.17 | 0.75 | 0.08 | 0.5 | 0.17 | 1.49 |
| 2 | 7.50 | 1.83 | 1.00 | .17 | .5 | .33 | 3.05 |
| 3 | 9.00 | 5.00 | .50 | .17 | .25 | .15 | .81 |
| 4 | 3.00 | 5.00 | .50 | .17 | .5 | .12 | 1.12 |
| 5 | 2.50 | 5.83 | .75 | .17 | .25 | .25 | .44 |
| 6 | 7.50 | 2.00 | 1.00 | .25 | .5 | .10 | 1.52 |
| 7 | 7.00 | 2.00 | 1.00 | .25 | .75 | .37 | 4.54 |
| 8 | 3.00 | 1.83 | .50 | .25 | .5 | .40 | 1.78 |
| 9 | 3.00 | 2.50 | .75 | .25 | .25 | .33 | .81 |
| 10 | 1.50 | 2.50 | .75 | .25 | .25 | .40 | 1.44 |
| 11 | 5.50 | 4.17 | 1.50 | .33 | .25 | .08 | .98 |
| 12 | 6.00 | 3.00 | 1.00 | .33 | .75 | .25 | 1.73 |
| 13 | 3.00 | ... | ... | ... | ... | .33 | ... |
| 14 | 3.25 | ... | ... | ... | ... | ... | ... |
| 15 | 11.00 | ... | ... | ... | ... | ... | ... |
| 16 | 3.00 | ... | ... | ... | ... | ... | ... |
| 17 | 3.00 | ... | ... | ... | ... | ... | ... |
| 18 | 10.00 | ... | ... | ... | ... | ... | ... |
| 19 | 2.50 | ... | ... | ... | ... | ... | ... |
| 20 | 3.00 | ... | ... | ... | ... | ... | ... |
| 21 | 6.00 | ... | ... | ... | ... | ... | ... |
| 22 | 3.50 | ... | ... | ... | ... | ... | ... |
| 23 | 5.00 | ... | ... | ... | ... | ... | ... |
| 24 | 8.50 | ... | ... | ... | ... | ... | ... |
| Ave. | 5.13 | 3.22 | .83 | .22 | .43 | .25 | 1.64 |
| Max. | 11.00 | 5.83 | 1.50 | .33 | .75 | .40 | 4.54 |
| Min. | 1.50 | 1.83 | .50 | .08 | .25 | .08 | .44 |

RED OIL PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson | DesAutels | Randall |
|---|---|---|---|---|---|---|
| 1 | 30 | 24.3 | 6 | 54 | 49.0 | 176 |
| 2 | 45 | 39 | 6 | 70 | 27.1 | 85 |
| 3 | 40 | 33.2 | 6 | 149 | 18.7 | ... |
| 4 | 20 | 27.5 | 7 | 147 | 36.6 | ... |
| 5 | 45 | 32 | 8 | 150 | 23.7 | ... |
| 6 | 45 | 28.5 | 8 | 151 | 19.3 | ... |
| 7 | 50 | 26 | 8 | 23 | 4.2 | ... |
| 8 | 35 | 22.5 | 9 | 28 | 35.5 | ... |
| 9 | 20 | 23.5 | 10 | 28 | 23.0 | ... |
| 10 | 15 | ... | 10 | 30 | 13.2 | ... |
| 11 | 40 | ... | 12 | 47 | 27.3 | ... |
| 12 | 10 | ... | 12 | 83 | ... | ... |
| 13 | 16 | ... | 12 | 24 | 49.0 | ... |
| 14 | 18 | ... | 12 | 29 | 39.2 | ... |
| 15 | 14 | ... | 12 | 36 | 39.3 | ... |
| 16 | 17 | ... | 13 | 50 | 104.0 | ... |
| 17 | 22 | ... | 14 | 79 | 178.0 | ... |
| 18 | 15 | ... | 15 | 132 | 38.7 | .. |
| 19 | 10 | ... | 16 | 17 | 46.0 | ... |
| 20 | 11 | ... | 22 | 45 | 29.5 | ... |
| 21 | 10 | ... | 22 | 56 | 17.2 | ... |
| 22 | 25 | ... | 22 | 79 | 43.0 | ... |
| 23 | 30 | ... | 23 | 88 | 26.5 | ... |
| 24 | 35 | ... | 23 | 150 | 69.5 | ... |
| Ave. | 25.8 | 28.5 | 12.8 | 73 | 132.5 | ... |
| Max. | 50 | 39 | 23 | 151 | 178.0 | ... |
| Min. | 10 | 22.5 | 6 | 17 | 4.2 | ... |

## Table I—Sample D

TURPENTINE PENETRATION, SECONDS

| Test | Little | J. B. Clarke | Wehmer | H. A. Smith | Carson | DesAutels | Randall |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 30 | 15 | Penetrates | 5 | Practically | 11 |
| 2 | 8 | 30 | 15 | Instantly | 5 | Instantly | 13 |
| 3 | 4 | 45 | 15 | | 5 | | 15 |
| 4 | 8 | 40 | 15 | | 5 | | 30 |
| 5 | 11 | 35 | 30 | | 5 | | 64 |
| 6 | 3 | 50 | 15 | | 5 | | 10 |
| 7 | 2 | 55 | 15 | | 5 | | 40 |
| 8 | 8 | 55 | 15 | | 2 | | 16 |
| 9 | 5 | 55 | 15 | | 5 | | 18 |
| 10 | 6 | 40 | 30 | | 3 | | 18 |
| 11 | 4 | 60 | 15 | | 3 | | 4 |
| 12 | 7 | 50 | 15 | | 2 | | 2 |
| 13 | 10 | .. | .. | | .. | | .. |
| 14 | 4 | .. | .. | | .. | | .. |
| 15 | 6 | .. | .. | | .. | | .. |
| 16 | 3 | .. | .. | | .. | | .. |
| 17 | 5 | .. | .. | | .. | | .. |
| 18 | 5 | .. | .. | | .. | | .. |
| 19 | 10 | .. | .. | | .. | | .. |
| 20 | 3 | .. | .. | | .. | | .. |
| 21 | 2 | .. | .. | | .. | | .. |
| 22 | 5 | .. | .. | | .. | | .. |
| 23 | 3 | .. | .. | | .. | | .. |
| 24 | 7 | .. | .. | | .. | | .. |
| Ave. | 5.5 | 45.4 | 18 | | 4 | | 20.1 |
| Max. | 11 | 60 | 30 | | 5 | | 64 |
| Min. | 2 | 30 | 15 | | 2 | | 2 |

RED OIL PENETRATION, SECONDS

| Test | Little | Wehmer | H. A. Smith | Carson | DesAutels (1st series) | DesAutels (2nd series) | Randall |
|---|---|---|---|---|---|---|---|
| 1 | 30 | 90 | 1 | 78 | 16 | 95 | 50 |
| 2 | 30 | 75 | 1 | 54 | 15 | 29 | 45 |
| 3 | 10 | 90 | 2 | 60 | 115 | 64 | 47 |
| 4 | 25 | 60 | 2 | 132 | 5 | 28 | 76 |
| 5 | 15 | 75 | 2 | 114 | 19 | 15 | 27 |
| 6 | 30 | 90 | 2 | 120 | 3 | 70 | 66 |
| 7 | 15 | 90 | 3 | 54 | 4 | 9 | 22 |
| 8 | 25 | 75 | 3 | 60 | 56 | 27 | 64 |
| 9 | 10 | 90 | 4 | 36 | 7 | 98 | 26 |
| 10 | 40 | .. | 5 | 42 | 31 | 2 | 111 |
| 11 | 10 | .. | 5 | 24 | 5 | 24 | 26 |
| 12 | 25 | .. | 5 | 162 | 21 | 33 | 22 |
| 13 | 8 | .. | 8 | 132 | 40 | 7 | 22 |
| 14 | 30 | .. | 10 | 18 | 105 | 72 | 51 |
| 15 | 7 | .. | 14 | 78 | 15 | 26 | 38 |
| 16 | 25 | .. | 15 | 24 | 8 | 21 | 35 |
| 17 | 10 | .. | 23 | 84 | 17 | 80 | 7 |
| 18 | 10 | .. | 26 | 24 | 2 | 11 | 4 |
| 19 | 28 | .. | 27 | 96 | 21 | 42 | 10 |
| 20 | 10 | .. | 44 | 204 | 65 | 120 | 34 |
| 21 | 12 | .. | 46 | 228 | 3 | 116 | 33 |
| 22 | 16 | .. | 47 | 108 | 32 | 2 | 85 |
| 23 | 50 | .. | 50 | 66 | 8 | 11 | 46 |
| 24 | 55 | .. | 55 | 60 | 15 | 8 | 121 |
| Ave. | 21.6 | 82 | 16.7 | 84 | 26.2 | 42.1 | 44.5 |
| Max. | 55 | 90 | 55 | 228 | 115 | 120 | 121 |
| Min. | 7 | 60 | 1 | 18 | 2 | 2 | 4 |

## Table I—Sample E

TURPENTINE PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson | DesAutels |
|---|---|---|---|---|---|
| 1 | 1.00 | 6.25 | 0.08 | 1.25 | 0.58 |
| 2 | 1.25 | 4.25 | .08 | .50 | .75 |
| 3 | 1.00 | 4.50 | .08 | .25 | .50 |
| 4 | 1.75 | 4.00 | .08 | 2.25 | .43 |
| 5 | 0.50 | 4.50 | .08 | 2.00 | .50 |
| 6 | .75 | 4.50 | .13 | .25 | .52 |
| 7 | .50 | 4.25 | .17 | .75 | .50 |
| 8 | .75 | 4.50 | .17 | 1.50 | .47 |
| 9 | 1.25 | 5.00 | .17 | .75 | .38 |
| 10 | 1.00 | 4.50 | .20 | 1.00 | .48 |
| 11 | 1.00 | 5.25 | .25 | 2.75 | .28 |
| 12 | 2.00 | 4.00 | .42 | 1.50 | .48 |
| 13 | 1.25 | ... | ... | ... | ... |
| 14 | 2.00 | ... | ... | ... | ... |
| 15 | 6.50 | ... | ... | ... | ... |
| 16 | 1.00 | ... | ... | ... | ... |
| 17 | 2.50 | ... | ... | ... | ... |
| 18 | .75 | ... | ... | ... | ... |
| 19 | .75 | ... | ... | ... | ... |
| 20 | 1.25 | ... | ... | ... | ... |
| 21 | .75 | ... | ... | ... | ... |
| 22 | .75 | ... | ... | ... | ... |
| 23 | 2.50 | ... | ... | ... | ... |
| 24 | .75 | ... | ... | ... | ... |
| Ave. | 1.81 | 4.62 | 0.16 | 1.23 | 0.49 |
| Max. | 6.50 | 6.25 | .42 | 2.75 | .75 |
| Min. | .50 | 4.00 | .08 | .25 | .28 |

RED OIL PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson | DesAutels |
|---|---|---|---|---|---|
| 1 | 0.67 | 12.5 | 1 | 20 | 76 |
| 2 | 2.00 | 8.5 | 1 | 11 | 46 |
| 3 | 5.75 | 9.5 | 2 | 32 | 45 |
| 4 | 1.50 | 8.7 | 2 | 27 | 56.5 |
| 5 | 3.75 | 9.3 | 3 | 17 | 56 |
| 6 | 2.25 | 10.5 | 3 | 19 | 31 |
| 7 | 2.50 | 11.0 | 5 | 13 | 6 |
| 8 | 2.75 | 9.5 | 5 | 17 | 23 |
| 9 | 5.25 | 8.5 | 5 | 7 | 25 |
| 10 | 4.00 | ... | 8 | 5 | 21 |
| 11 | 4.25 | ... | 10 | 18 | 33 |
| 12 | 5.00 | ... | 10 | 29 | 65 |
| 13 | 4.25 | ... | 10 | 25 | 27 |
| 14 | 6.00 | ... | 10 | 25 | 37.25 |
| 15 | 1.75 | ... | 12 | 26 | 25 |
| 16 | 3.50 | ... | 15 | 27 | 14 |
| 17 | 4.00 | ... | 15 | 28 | 35 |
| 18 | 2.75 | ... | 18 | 34 | 39.5 |
| 19 | 5.50 | ... | 18 | 5 | 3.9 |
| 20 | 4.25 | ... | 18 | 7 | 28.75 |
| 21 | 3.25 | ... | 18 | 12 | 7.2 |
| 22 | 3.75 | ... | 20 | 12 | 14 |
| 23 | 1.75 | ... | 20 | 26 | 24 |
| 24 | 3.00 | ... | 20 | 24 | 5.5 |
| Ave. | 3.48 | 9.8 | 10.4 | 19.4 | 31.0 |
| Max. | 6.00 | 12.5 | 20 | 34 | 76 |
| Min. | 0.67 | 8.5 | 1 | 5 | 3.9 |

## Table I—Sample F

TURPENTINE PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson |
|---|---|---|---|---|
| 1 | 1.50 | 0.75 | All tests between | 0.50 |
| 2 | 2.50 | .75 | 1 and 3 seconds | .25 |
| 3 | .50 | .50 | | .25 |
| 4 | 1.75 | .50 | | .50 |
| 5 | 1.75 | .50 | | .33 |
| 6 | 1.00 | .75 | | .50 |
| 7 | 2.25 | .75 | | 3.00 |
| 8 | 3.25 | .50 | | 1.00 |
| 9 | .75 | 1.00 | | .75 |
| 10 | 1.00 | 1.50 | | 1.00 |
| 11 | 2.50 | .75 | | .25 |
| 12 | .50 | .75 | | .25 |
| 13 | 1.25 | ... | | ... |
| 14 | 1.50 | ... | | ... |
| 15 | 1.50 | ... | | ... |
| 16 | 2.00 | ... | | ... |
| 17 | 1.00 | ... | | ... |
| 18 | 2.25 | ... | | ... |
| 19 | 1.25 | ... | | ... |
| 20 | .50 | ... | | ... |
| 21 | .50 | ... | | ... |
| 22 | 2.50 | ... | | ... |
| 23 | 1.25 | ... | | ... |
| 24 | .50 | ... | | ... |
| Ave. | 1.45 | .75 | 0.03 | .72 |
| Max. | 3.25 | 1.50 | 0.05 | 3.00 |
| Min. | .50 | .50 | 0.016 | .25 |

RED OIL PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson |
|---|---|---|---|---|
| 1 | 18 | 3.5 | 0.2 | 5 |
| 2 | 22 | 4.0 | 0.2 | 5 |
| 3 | 18 | 3.8 | 0.3 | 11 |
| 4 | 54 | 4.5 | 0.8 | 12 |
| 5 | 6 | 4.2 | 0.5 | 13 |
| 6 | 20 | 3.8 | 1 | 18 |
| 7 | 10 | 4.5 | 1 | 6 |
| 8 | 25 | 4.7 | 3.3 | 6 |
| 9 | 35 | 4.0 | 4.5 | 7 |
| 10 | 32 | .. | 5 | 10 |
| 11 | 8 | .. | 5 | 10 |
| 12 | 52 | .. | 5 | 10 |
| 13 | 51 | .. | 9 | 4 |
| 14 | 32 | .. | 10 | 3 |
| 15 | 40 | .. | 13 | 19 |
| 16 | 10 | .. | 15 | 19 |
| 17 | 18 | .. | 16 | 24 |
| 18 | 21 | .. | 18 | 28 |
| 19 | 45 | .. | 28 | 3 |
| 20 | 35 | .. | 42 | 8 |
| 21 | 50 | .. | 1 | 10 |
| 22 | 8 | .. | 1 | 10 |
| 23 | 18 | .. | 3 | 10 |
| 24 | 12 | .. | 3 | 19 |
| Ave. | 26.7 | 4.1 | 10.0 | 11.2 |
| Max. | 52 | 4.7 | 55 | 28 |
| Min. | 6 | 3.5 | 0.2 | 3 |

## Table I—Sample G

TURPENTINE PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson | DesAutels |
|---|---|---|---|---|---|
| 1 | 17 | 24.8 | 0.3 | 43 | 0.23 |
| 2 | 28 | 33.2 | 0.5 | 1.25 | 2.58 |
| 3 | 27 | 23.5 | 0.5 | 6.5 | .58 |
| 4 | 14 | 20.5 | 0.7 | * 9 | 1.83 |
| 5 | 15 | 21.5 | 1.2 | *10 | 4.00 |
| 6 | 20 | 22.5 | 1.5 | *15 | 1.92 |
| 7 | 36 | 23.0 | 1.5 | *15 | .75 |
| 8 | 15 | 25.5 | 1.7 | 3 | 4.83 |
| 9 | 21 | 27.5 | 2.5 | *12 | .83 |
| 10 | 30 | 26.0 | 3.5 | *12 | 1.00 |
| 11 | 45 | 22.5 | 6.0 | *26 | .50 |
| 12 | 102 | 25.0 | 7.0 | *26 | 1.08 |
| 13 | 45 | ... | .. | ..... | .33 |
| 14 | 18 | ... | .. | ..... | 4.83 |
| 15 | 26 | ... | .. | ..... | 5.25 |
| 16 | 96 | ... | .. | ..... | 8.08 |
| 17 | 70 | ... | .. | ..... | ... |
| 18 | 19 | ... | .. | ..... | .... |
| 19 | 18 | ... | .. | ..... | .... |
| 20 | 16 | ... | .. | ..... | ... |
| 21 | 15 | ... | .. | ..... | .... |
| 22 | 22 | ... | .. | ..... | .... |
| 23 | 20 | ... | .. | ..... | .... |
| 24 | 25 | ... | .. | ..... | .... |
| Ave. | 31.7 | 24.6 | 2.24 | 14.8 | 2.42 |
| Max. | 102 | 33.2 | 7.0 | 43 | 8.08 |
| Min. | 14 | 20.5 | 0.3 | 1.25 | .23 |

RED OIL PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson | DesAutels |
|---|---|---|---|---|---|
| 1 | 30 | 175 | 0.3 | 18 | 136.0 |
| 2 | 40 | 180 | 1.0 | 29 | 61.5 |
| 3 | 30 | 150 | 4.5 | 58 | 30.0 |
| 4 | 90 | 200 | 5.0 | 83 | 21.5 |
| 5 | 115 | ... | 10 | 84 | 28.5 |
| 6 | 110 | ... | 13 | 179 | 76.0 |
| 7 | 40 | ... | 17 | 12 | 4.7 |
| 8 | 65 | ... | 24 | 61 | 6.5 |
| 9 | 25 | ... | 38 | 65 | 7.3 |
| 10 | 180 | ... | 40 | 79 | 1.5 |
| 11 | 6 | ... | 40 | 106 | 22.2 |
| 12 | 20 | ... | 40 | 152 | 50.3 |
| 13 | 45 | ... | 50 | 16 | 95.5 |
| 14 | 100 | ... | 44 | 25 | 33.0 |
| 15 | 150 | ... | 59 | 36 | 78.5 |
| 16 | 180 | ... | 70 | 46 | 119.5 |
| 17 | 24 | ... | 71 | 46 | 67.5 |
| 18 | 70 | ... | 120 | 98 | 181.0 |
| 19 | 13 | ... | 136 | 34 | 177.0 |
| 20 | 15 | ... | 180 | 44 | 84.0 |
| 21 | 105 | ... | 180 | 50 | 7.0 |
| 22 | 60 | ... | 240 | 108 | 24.5 |
| 23 | 120 | ... | 300 | 119 | 80.5 |
| 24 | 45 | ... | 300 | 123 | 104.0 |
| Ave. | 70 | 176 | 82.6 | 70 | 62.4 |
| Max. | 180 | 200 | 300 | 179 | 181.0 |
| Min. | 6 | 150 | 0.3 | 12 | 1.5 |

* True result less than this because of imperfect contact with underlying paper.

## Table I—Sample H

TURPENTINE PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson |
|---|---|---|---|---|
| 1 | 48 | 120+ | 3 | 5.25 |
| 2 | 25 | " | 4 | 7 |
| 3 | 72 | " | 5 | 17 |
| 4 | 40 | 60+ | 6 | *30 |
| 5 | 75 | " | 7 | *30 |
| 6 | 60 | " | 8 | *30 |
| 7 | 45 | ... | 10 | *30 |
| 8 | 30 | ... | 15 | *30 |
| 9 | 40 | ... | 15 | *30 |
| 10 | 200 | ... | 17 | *30 |
| 11 | 150 | ... | 17 | *30 |
| 12 | 75 | ... | 21 | *30 |
| 13 | 60 | ... | .. | .. |
| 14 | 115 | ... | .. | .. |
| 15 | 90 | ... | .. | .. |
| 16 | 180 | ... | .. | .. |
| 17 | 120 | ... | .. | .. |
| 18 | 140 | ... | .. | .. |
| 19 | 60 | ... | .. | .. |
| 20 | 75 | ... | .. | .. |
| 21 | 90 | ... | .. | .. |
| 22 | 45 | ... | .. | .. |
| 23 | 30 | ... | .. | .. |
| 24 | 90 | ... | .. | .. |
| Ave. | 81.5 | 120+ | 10.7 | 24.9 |
| Max. | 200 | ... | 21 | 30 |
| Min. | 25 | ... | 3 | 5.25 |

RED OIL PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson |
|---|---|---|---|---|
| 1 | 50 | 300+ | 10 | 21 |
| 2 | 30 | " | 10 | 27 |
| 3 | 120 | " | 20 | 45 |
| 4 | 23 | " | 23 | 212 |
| 5 | 60 | ... | 30 | 266 |
| 6 | 20 | ... | 65 | 376 |
| 7 | 170 | ... | 30 | 260 |
| 8 | 180 | ... | 120 | 1440+ |
| 9 | 60 | ... | 120 | 1440+ |
| 10 | 60 | ... | 170 | 1440+ |
| 11 | 6 | ... | 230 | 1440+ |
| 12 | 10 | ... | 300 | 1440+ |
| 13 | 75 | ... | 300 | 40 |
| 14 | 140 | ... | 345 | 62 |
| 15 | 120 | ... | 345 | 71 |
| 16 | 18 | ... | 480 | 140 |
| 17 | 20 | ... | 540 | 142 |
| 18 | 150 | ... | 671 | 215 |
| 19 | 75 | ... | 840 | 33 |
| 20 | 60 | ... | 1380 | 140 |
| 21 | 90 | ... | 1380 | 900 |
| 22 | 55 | ... | 1440 | 420 |
| 23 | 85 | ... | 2160 | 1440+ |
| 24 | 35 | ... | 2880 | 1440+ |
| 25 | ... | ... | 2880 | .... |
| Ave. | 71 | 300+ | 671 | 560+ |
| Max. | 180 | ... | 2880 | 1440+ |
| Min. | 6 | ... | 10 | 21 |

* True result less than this because of imperfect contact with underlying paper.

**Table I—Sample I**

TURPENTINE PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson |
|---|---|---|---|---|
| 1 | 4 | 8.0 | 0.5 | 5.25 |
| 2 | 7 | 8.8 | .6 | 1.0 |
| 3 | 5 | 6.0 | .7 | 1.75 |
| 4 | 5 | 7.2 | 1.0 | 2.5 |
| 5 | 18 | 8.0 | 1.0 | 2.75 |
| 6 | 16 | 7.5 | 1.5 | 4.25 |
| 7 | 11 | 9.0 | 1.5 | .25 |
| 8 | 20 | 7.5 | 1.5 | *6. |
| 9 | 11 | 8.3 | 1.0 | 1.5 |
| 10 | 10 | 7.5 | 1.5 | 3.75 |
| 11 | 35 | 7.7 | 1.7 | *10. |
| 12 | 9 | 8.0 | 3.0 | *10. |
| 13 | 23 | ... | ... | .... |
| 14 | 20 | ... | ... | .... |
| 15 | 14 | ... | ... | .... |
| 16 | 30 | ... | ... | .... |
| 17 | 10 | ... | ... | .... |
| 18 | 15 | ... | ... | .... |
| 19 | 15 | ... | ... | .... |
| 20 | 20 | ... | ... | .... |
| 21 | 12 | ... | ... | .... |
| 22 | 14 | ... | ... | .... |
| 23 | 11 | ... | ... | .... |
| 24 | 8 | ... | ... | .... |
| Ave. | 14.3 | 7.8 | 1.29 | 4.1 |
| Max. | 35 | 9.0 | 3.0 | 2.9 |
| Min. | 4 | 6.0 | 0.5 | 5.3 |

RED OIL PENETRATION, MINUTES

| Test | Little | Wehmer | H. A. Smith | Carson |
|---|---|---|---|---|
| 1 | 6 | 57.5 | 5 | 16 |
| 2 | 6 | 47.5 | 5 | 25 |
| 3 | 50 | 65.0 | 6 | 27 |
| 4 | 12 | 55.0 | 6 | 35 |
| 5 | 50 | ... | 7 | 43 |
| 6 | 20 | ... | 7 | 48 |
| 7 | 22 | ... | 10 | 17 |
| 8 | 30 | ... | 17 | 40 |
| 9 | 18 | ... | 20 | 41 |
| 10 | 14 | ... | 20 | 45 |
| 11 | 25 | ... | 23 | 55 |
| 12 | 24 | ... | 23 | 67 |
| 13 | 10 | ... | 23 | 10 |
| 14 | 50 | ... | 25 | 11 |
| 15 | 12 | ... | 25 | 40 |
| 16 | 16 | ... | 25 | 86 |
| 17 | 50 | ... | 25 | 109 |
| 18 | 30 | ... | 25 | 126 |
| 19 | 20 | ... | 30 | 27 |
| 20 | 12 | ... | 30 | 28 |
| 21 | 18 | ... | 30 | 26 |
| 22 | 28 | ... | 55 | 28 |
| 23 | 14 | ... | 60 | 48 |
| 24 | 18 | ... | 30 | 55 |
| Ave. | 23.1 | 56.25 | 22.2 | 44 |
| Max. | 50 | 65 | 60 | 126 |
| Min. | 6 | 47.5 | 5 | 10 |

* True result less than this because of imperfect contact with underlying paper.

**Table II—Summary of Tests**

TURPENTINE TEST, MINUTES

| Sample | Little | Clark | Wehmer | Smith | Carson | DesAutels | Randall | Average |
|---|---|---|---|---|---|---|---|---|
| A | 59 | 79 | 120+ | 28.8 | 36.9 | 23.6 | ... | 58+ |
| B | 37.6 | 19.0 | 13.3 | 2.2 | 3.9 | 2.6 | ... | 13 |
| C | 5.13 | 3.22 | 0.83 | 0.22 | 0.43 | 0.25 | 1.64 | 1.7 |
| D | 0.092 | 0.757 | 0.30 | Instantly | 0.067 | Practically Instant | 0.335 | 0.22 |
| E | 1.81 | .... | 4.62 | 0.16 | 1.23 | 0.49 | ... | 1.7 |
| F | 1.45 | .... | 0.75 | 0.03 | 0.72 | ... | ... | 0.7 |
| G | 31.7 | .... | 24.6 | 2.24 | 14.8 | 2.42 | ... | 15 |
| H | 81.5 | .... | 120+ | 10.7 | 24.9 | ... | ... | 59+ |
| I | 14.3 | .... | 7.8 | 1.29 | 4.1 | ... | ... | 6.9 |

RED OIL TEST, MINUTES

| Sample | Little | Wehmer | Smith | Carson | DesAutels | Randall | Average |
|---|---|---|---|---|---|---|---|
| A | 268+ | 300+ | 335 | 958 | 2520 | ... | 876+ |
| B | 60 | 26.4 | 85 | 76 | 80 | ... | 65 |
| C | 25.8 | 28.5 | 12.8 | 73 | 32.5 | ... | 35 |
| D | 0.36 | 1.37 | 16.7 | 1.42 | a 0.44 b 0.70 | 0.74 | 3.1 |
| E | 3.48 | 9.8 | 10.4 | 19.4 | 31.0 | ... | 15 |
| F | 26.7 | 4.1 | 10.0 | 11.2 | ... | ... | 13 |
| G | 70 | 176 | 82.6 | 70 | 62.4 | ... | 92 |
| H | 71 | 300+ | 671 | 560+ | ... | ... | 400+ |
| I | 23.1 | 56.25 | 22.2 | 44 | ... | ... | 36 |

**Table III—Individual Averages in Groups of Six**

TURPENTINE PENETRATION, MINUTES

SAMPLE A

| | Little | Clarke | Carson | DesAutels | Wehmer | Randall |
|---|---|---|---|---|---|---|
| Average of | | | | | | |
| First 6 | 51 | 56 | 42 | 24.3 | ... | ... |
| Second 6 | 44 | 104 | 31 | 21.0 | ... | ... |
| Third 6 | 63 | ... | ... | 25.5 | ... | ... |
| Fourth 6 | 80 | ... | ... | ... | ... | ... |

SAMPLE B

| | | | | | | |
|---|---|---|---|---|---|---|
| Average of | | | | | | |
| First 6 | 38.7 | 14.7 | 4.0 | 1.8 | 13.3 | ... |
| Second 6 | 37.5 | 21.2 | 3.8 | 2.7 | 13.3 | ... |
| Third 6 | 34.2 | ... | ... | 2.5 | ... | ... |
| Fourth 6 | 40.0 | ... | ... | ... | ... | ... |

SAMPLE C

| | | | | | | |
|---|---|---|---|---|---|---|
| Average of | | | | | | |
| First 6 | 5.87 | 3.81 | 0.42 | 0.19 | 0.75 | 1.41 |
| Second 6 | 4.33 | 2.67 | 0.43 | 0.31 | 0.92 | 1.88 |
| Third 6 | 5.54 | ... | ... | ... | ... | ... |
| Fourth 6 | 4.75 | ... | ... | ... | ... | ... |

SAMPLE D (seconds)

| | | | | | | |
|---|---|---|---|---|---|---|
| Average of | | | | | | |
| First 6 | 6.5 | 38.3 | 4.5 | ... | 17.5 | 24 |
| Second 6 | 5.3 | 52.5 | 3.3 | ... | 17.5 | 16 |
| Third 6 | 5.5 | ... | ... | ... | ... | ... |
| Fourth 6 | 5.0 | ... | ... | ... | ... | ... |

SAMPLE E

| | | | | | | |
|---|---|---|---|---|---|---|
| Average of | | | | | | |
| First 6 | 1.04 | ... | 1.08 | 0.55 | 4.67 | ... |
| Second 6 | 1.08 | ... | 1.38 | 0.43 | 4.58 | ... |
| Third 6 | 2.33 | ... | ... | ... | ... | ... |
| Fourth 6 | 1.12 | ... | ... | ... | ... | ... |

SAMPLE F

| | | | | | | |
|---|---|---|---|---|---|---|
| Average of | | | | | | |
| First 6 | 1.50 | ... | 0.39 | ... | 0.62 | ... |
| Second 6 | 1.71 | ... | 1.04 | ... | 0.88 | ... |
| Third 6 | 1.58 | ... | ... | ... | ... | ... |
| Fourth 6 | 1.08 | ... | ... | ... | ... | ... |

SAMPLE G

| | | | | | | |
|---|---|---|---|---|---|---|
| Average of | | | | | | |
| First 6 | 20.2 | ... | 14.1 | 1.86 | 24.3 | ... |
| Second 6 | 41.5 | ... | 15.7 | 1.50 | 24.9 | ... |
| Third 6 | 45.7 | ... | ... | 4.62* | ... | ... |
| Fourth 6 | 19.3 | ... | ... | ... | ... | ... |

SAMPLE H

| | | | | | | |
|---|---|---|---|---|---|---|
| Average of | | | | | | |
| First 6 | 53.3 | ... | 19.7 | ... | ... | ... |
| Second 6 | 90.0 | ... | 30.0 | ... | ... | ... |
| Third 6 | 117.5 | ... | ... | ... | ... | ... |
| Fourth 6 | 65.0 | ... | ... | ... | ... | ... |

SAMPLE I

| | | | | | | |
|---|---|---|---|---|---|---|
| Average of | | | | | | |
| First 6 | 9.2 | ... | ... | ... | 7.6 | ... |
| Second 6 | 16.0 | ... | ... | ... | 8.0 | ... |
| Third 6 | 18.7 | ... | ... | ... | ... | ... |
| Fourth 6 | 13.3 | ... | ... | ... | ... | ... |

**Comments of Collaborators**

Several of the collaborators commented on the methods as follows:

*Arthur T. Randall:* With the oleic acid test it was impossible to get any results on samples A and B. The drop of oleic acid was placed on the sample as directed but did not show any signs of coming through after several hours. This condition was also experienced with the turpentine test on samples A and B.

In testing C by the oleic acid test it was found that the time required was from 1 hour and 25 minutes to 2 hours and 50 minutes. Only two results are being reported.

*G. F. DesAutels:* In place of the polariscope tubes for the oleic acid tests we used little pieces of brass pipe with the ends faced, of exactly the same inside diameter and approximately the same weight as the polariscope caps.

In carrying out the tests we found it desirable in the turpentine test to saturate the little piles of sand rather than placing a smaller quantity of the solution on them as we get by only dropping 4 or 5 drops of the liquid on them. Our results, we think, are considerably more consistent by following the method indicated.

With the oleic acid test, using the little metal rings, we of course found that with papers in which the liquid spread so as to reach the edge of the metal ring, penetration was much more rapid under the edge of the ring and we would like to suggest in connection with this method that a ring with a somewhat larger inside diameter might be desirable.

With the more greaseproof papers we feel that the oleic acid test is not suitable because of its slowness; and likewise with the turpentine test the less greaseproof papers are penetrated too rapidly for accurate measurements.

With paper D, using the oleic acid test we ran a complete test twice just to see how consistent our conclusions would be in each case, and as you can see from the enclosed data, our results are anything but consistent.

The writer has always taken the position that any attempt to report greaseproof tests in terms of numerical values for penetration was apt to be misleading and the results of last year's cooperative tests which Allen Abrams has reported seem to bear out this idea. We have never found it practical to do anything more than classify such papers in a general sort of way, say, those which show complete penetration immediately, than those which are pentrated badly within a few hours, another group which holds for perhaps 8 hours, then 15 hours, 24 hours, etc. In our

experience anything which holds up 24 hours in the turpentine test is usually perfect for an indefinite period.

*H. A. Smith:* It is felt in regard to the use of oleic acid that with an opaque tissue sheet under the paper the test would give a clearer cut and a little more accurate results than the use of filter paper. A trial with an opaque tissue, known as matrix tissue which is used as the facing for stereotype matrices, was tried and seemed to give very good results.

*F. T. Carson:* As you will note, in some cases the turpentine did not stain the paper underneath, although it had come through in several places. This appeared to be due to poor contact in the case of papers having an uneven surface.

The oleic acid method is very slow and tedious.

*P. F. Wehmer:* In the oleic acid test, polariscope caps not being available, brass rings 1 inch bore x ¼ inch long were used, (weight 21.5 grams). It was noted that the oil tended to penetrate more often where the ring was in contact with the paper, then elsewhere on the specimen.

In the turpentine test, the sand used was a clean white sand sieved to pass 20 mesh and be retained on 30 mesh sieve. 1 drop of turpentine from a 1 cc. pipette was used except when otherwise noted.

In testing samples A and H by the turpentine method, at the end of 60 minutes, the 1 drop of turpentine had apparently dried out. Three other tests were made using 3 drops of turpentine. At the end of 120 minutes the turpentine had apparently dried out. The tests on samples A and H were therefore discontinued.

### Discussion of Results

Grading the sample which shows the greatest resistance to penetration as 1 and that which shows the quickest penetration as 9, the samples would be graded by the different collaborators as follows:

**Turpentine Test**

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| Little | 2 | 3 | 6 | 9 | 7 | 8 | 4 | 1 | 5 |
| Clarke | 1 | | | 9 | | | | | |
| Wehmer | 1 | 4 | 7 | 9 | 6 | 8 | 3 | 1 | 5 |
| Smith | 1 | 3 | 6 | 9 | 7 | 8 | 3 | 2 | 5 |
| Carson | 1 | 4 | 8 | 9 | 6 | 7 | 3 | 2 | 4 |
| DesAutels | 1 | | 8 | 9 | | | | | |
| Average | 1 | 3 | 6 | 9 | 6 | 8 | 3 | 1 | 5 |

**Red Oil Test**

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| Little | 1 | 4 | 5 | 9 | 8 | 5 | 2 | 2 | 5 |
| Wehmer | 1 | 5 | 5 | 9 | 7 | 8 | 3 | 1 | 4 |
| Smith | 2 | 3 | 7 | 6 | 8 | 8 | 3 | 1 | 5 |
| Carson | 1 | 3 | 3 | 9 | 7 | 8 | 3 | 2 | 6 |
| DesAutels | 1 | | | 9 | | | | | |
| Average | 1 | 4 | 5 | 9 | 7 | 7 | 3 | 2 | 5 |

It will be noted that by both tests samples A and H showed the least penetration. These results are consistent with the quality of these papers which were both high grade greaseproof papers. Conversely, both tests show sample D to be the least greaseproof and this was a light 20 pound paper.

On the whole the different collaborators graded the papers in approximately the same way by both tests. This is shown by the graphs in Fig. 1. (Samples A and H are omitted as a true average could not be obtained.) There is, however, a wide variation not only in the numerical results reported by the different collaborators but in the individual tests on the different samples by the same person. Several of the collaborators reported results in the order in which they were obtained. The averages of these results in groups of 6 are shown in Table III.

While it is realized that there is undoubtedly a considerable personal factor in determining the end point of an individual test, the results seem to show that the penetration varies widely in different parts of the same sample. Consequently a large number of individual tests is necessary to get a representative average.

In any individual test the results simply represent the time required for the liquid in question to penetrate the least resistant spot in the individual piece of paper, thus it seems doubtful if a close agreement can be expected in numerical results obtained by different tests on the same paper by the same method. In most of the physical tests on paper we are dealing with three dimensions, length, breadth and thickness. In the folding test, however, the dimensions are practically reduced to two, length and thickness. In other words, the folding test is made on what practically amounts to a line on the paper. It is well known that the folding results on an individual sample show greater variations than the other physical tests such as bursting, tensile and tearing. In the grease penetration test as above outlined, the actual portion of the paper tested is practically a point. In other words, length and breadth have been eliminated. Obviously, a given point on a sheet of paper can hardly be representative of the entire sheet. Nevertheless, if tests can be made at a sufficient number of such points, the result may be a sufficiently accurate representation of the greaseproof qualities of the sheet.

### Other Methods

Ernest Scheller of the Reynolds Metals Company, Louisville, Ky., submits the following method for testing the grease resisting qualities of paper, which is based on the number of transudations per unit area in a definite period of time.

Prepare a wooden frame 12 inches long, 1 inch wide and 1 inch deep similar to a shallow pan without a bottom. Apply a heavy coat of glucose syrup (45 deg. Baumé) to the bottom edges of the frame and place it upon the paper to be tested, close to the edge so that the length of the frame parallels the width of the

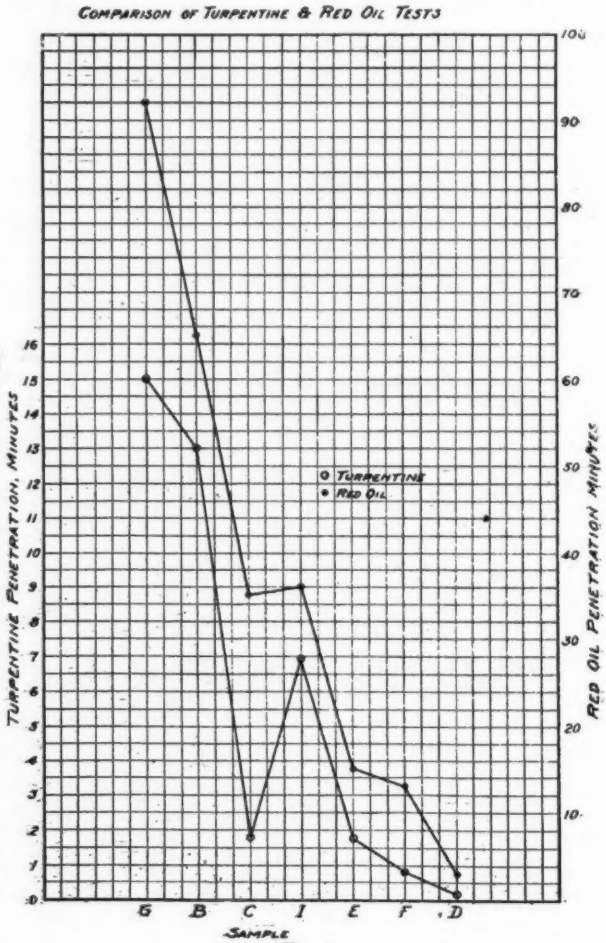



FIG. 1
Comparison of turpentine and red oil tests.

**Table III—Individual Averages in Groups of Six**

RED OIL PENETRATION, MINUTES

| | Little | Carson | DesAutels | | Randall |
|---|---|---|---|---|---|
| | | SAMPLE A | | | |
| Average of | | | | | |
| First 6 | 222 + | 1160 | .. | | .. |
| Second 6 | 293 + | 1110 | .. | | .. |
| Third 6 | ... | 800 | .. | | .. |
| Fourth 6 | ... | 750 | .. | | .. |
| | | SAMPLE B | | | |
| Average of | | | | | |
| First 6 | 80.0 | 60 | 85 | | .. |
| Second 6 | 68.7 | 49 | 91 | | .. |
| Third 6 | 48.5 | 82 | 99 | | .. |
| Fourth 6 | 43.3 | 113 | 47 | | .. |
| | | SAMPLE C | | | |
| Average of | | | | | |
| First 6 | 37.5 | 120 | 29.1 | | .. |
| Second 6 | 28.3 | 40 | 20.6 | | .. |
| Third 6 | 17.0 | 58 | 74.7 | | .. |
| Fourth 6 | 20.2 | 72 | 38.6 | | .. |
| | | SAMPLE D (Seconds) | | | |
| Average of | | | (a) | (b) | |
| First 6 | 23.3 | 93 | 29 | 50 | 52 |
| Second 6 | 20.8 | 63 | 21 | 32 | 45 |
| Third 6 | 15.0 | 60 | 31 | 36 | 26 |
| Fourth 6 | 28.5 | 127 | 24 | 50 | 55 |
| | | SAMPLE E | | | |
| Average of | | | | | |
| First 6 | 2.65 | 21 | 52 | | .. |
| Second 6 | 3.96 | 15 | 29 | | .. |
| Third 6 | 3.71 | 27 | 30 | | .. |
| Fourth 6 | 3.58 | 14 | 14 | | .. |
| | | SAMPLE F | | | |
| Average of | | | | | |
| First 6 | 23.0 | 11 | .. | | .. |
| Second 6 | 27.0 | 8 | .. | | .. |
| Third 6 | 28.7 | 16 | .. | | .. |
| Fourth 6 | 28.0 | 10 | .. | | .. |
| | | SAMPLE G | | | |
| Average of | | | | | |
| First 6 | 69 | 75 | 59 | | .. |
| Second 6 | 55 | 79 | 15 | | .. |
| Third 6 | 95 | 44 | 96 | | .. |
| Fourth 6 | 60 | 80 | 79 | | .. |
| | | SAMPLE H | | | |
| Average of | | | | | |
| First 6 | 51 | 158 | .. | | .. |
| Second 6 | 81 | 1243+ | .. | | .. |
| Third 6 | 87 | 112 | .. | | .. |
| Fourth 6 | 67 | 729+ | .. | | .. |
| | | SAMPLE I | | | |
| Average of | | | | | |
| First 6 | 24.0 | 32 | .. | | .. |
| Second 6 | 22.2 | 44 | .. | | .. |
| Third 6 | 28.0 | 64 | .. | | .. |
| Fourth 6 | 18.3 | 35 | .. | | .. |

paper. (After this test, take another specimen adjacent to the first so that the test represents the entire width of the paper).

See that the paper is perfectly sealed to the frame with the glucose. Trim the paper within ¼ inch of the frame and place in a shallow pan, 14 inches long, 10 inches wide and 1 inch deep, filled about one-quarter full with turpentine, colored a deep red with an oil-soluble dye. Take care not to trap any air bubbles. At the expiration of a definite time period, remove the frame with the paper and wipe dry the bottom of the paper. Separate the paper from the frame and trim within the glucose border.

The transudations appear as dark spots which can be accentuated by placing the paper against a white background. The number of spots per unit area is then a measure of the greaseproof quality of the paper. Rather than counting the spots, the tested paper may, if desired, be compared with standard papers tested in the same way.

This method has been tried out in a preliminary way by the sub-committee chairman on the papers collected for the coöperative tests. The approximate number of transudations per 100 square inches was as follows:

| | Immersion | |
|---|---|---|
| | 1 minute | 5 minutes |
| Sample A | 30 | 280 |
| Sample B | 2900 | 3500 |
| Sample C | 23000 | ... |
| Sample D | Too many to count | |
| Sample E | 11000 | ... |
| Sample F | 3300 | 5800 |
| Sample G | 1100 | 2200 |
| Sample H | 675 | 740 |
| Sample I | 14000 | ... |

This test on the whole seems to classify the papers in a manner similar to the previous turpentine and red oil tests, samples A and H showing a comparatively small number of transudation spots and samples C and D a very large number.

An attempt was made to photograph the papers thus treated and six of the papers are shown in Fig. 2. Samples A, B and C were very difficult to photograph and the true color spots in A were much fewer than would appear from the photograph. This method shows in a striking way the difference in behavior of the papers. In case of samples E and F for instance, many of the spots apparently came through quite quickly and then spread into larger areas.

This method would seem to warrant further consideration. It is possible that considerable information could be obtained by applying different periods of exposure to different types of paper and taking into consideration not only the number of transudation spots but also the size of the spots.

H. L. Hammarlund of the Hamersley Manufacturing Company, Garfield, N. J., proposes the use of talc powder as an indicator for oil penetration. As a penetrating medium he used peanut oil with a viscosity of 185 seconds Saybolt and 110 deg. F. The oil is poured in a flat glass dish with an inside diameter of 2 inches, completely filling the dish which is placed in a larger dish or pan. The paper is cut 2.5 inches square and prepared by rubbing it on one side with fine powdered talc, using a soft piece of felt. The excess talc is carefully shaken off and the paper is then placed on the oil and the time determined for 6 spots of oil to show up inside the 2-inch circle. To make the oil spots more distinct the oil is colored dark red and the vision is centered on the test surface by screening off the outside parts of the test pieces with a piece of black paper in which a 2-inch circle has been cut.

He also mentioned a variation of the test in which the test sheet is creased by rolling a weight on it, after which it is carefully flattened out and powdered with talc. In this case the end point is the time required for six spots to appear on two inches of the crease.

The sub-committee has not had opportunity to investigate this method.

C. H. Nystrom of the Thilmany Pulp and Paper Company, Kaukauna, Wis., suggests using asphalted duplex kraft paper as an indicator for the oil penetration. This consists of two sheets of kraft paper cemented together with an asphalt layer. When oil or turpentine is applied to the surface a black spot appears almost instantaneously. He proposes placing the paper to be tested on top of a piece of this duplex paper, applying the oil or turpentine in the usual way and noting either the number of black spots produced on the duplex paper in a definite time or the time required for the first appearance of a black spot.

This method also the sub-committee has not had opportunity to investigate.

### Recommendations

It is recommended

(1) That the subject of greaseproof testing be further studied with special reference to

(a) the method proposed by Ernest Scheller

(b) the classification of so called greaseproof papers by the results of the tests into groups (such as greaseproof, semi-greaseproof, grease-resisting, semi-grease-resisting, non-grease-resisting, etc.) rather than the use of numerical results.

(2) That the following method for testing paper for grease resistance be presented to the Association for adoption as tentative.

### Method for Testing Paper for Grease Resistance

The paper shall first be tested in a preliminary way by the turpentine penetration method using 4 separate pieces. If the average result of the penetration by the preliminary test is less than 5 minutes, the paper shall be tested by the red oil penetration method.

#### Turpentine Penetration Method

The penetrating agent for this test shall be commercial spirits of turpentine prepared as follows:

To each 100 cc. of the turpentine add approximately 5 grams of anhydrous calcium chloride. Stopper the container, shake

thoroughly and let stand several hours, shaking from time to time. Then filter through a dry filter. Color the dehydrated filtered turpentine a bright red by dissolving in it a sufficient amount of oil-soluble red dye.

At least 12 pieces and preferably 24 shall be cut from the paper. The pieces shall be uncreased and about 4 inches square. Each piece shall be placed on the lower part of a piece of clean white paper, with a smooth finish, about 5 by 7 inches, flat on the table. About 2 grams of sand shall be placed on the center of each test sheet so as to give a low pile about 1 inch in diameter. The sand shall be clean, quartz sand, sieved to pass a No. 20 sieve and retained on a No. 30 sieve.

The time shall be noted and with a medicine dropper or piece of glass tubing several drops of the colored turpentine shall be placed on each pile of sand. The amount of turpentine used shall be sufficient to nearly saturate the sand but not sufficient to run out beyond the edges of the pile. Each sand pile shall then be covered with a small inverted watch glass. The test sheets shall be slid back horizontally from time to time, taking care not to disturb the watch glass or the sand; the under white paper examined carefully for spots of color from the turpentine and the sample sheet then slid forward into position again. As soon as the first spot of color appears under any sheet, the total time elapsed shall be noted in minutes, or, with quick penetration, in seconds, and recorded as the Initial Turpentine Penetration.

The report shall state the number of tests, the maximum, the minimum and the average penetration.

### Red Oil Penetration Method

The penetrating agent for this test shall be U.S.P. oleic acid or red oil, colored bright red by dissolving in it a suitable amount of oil-soluble red dye.

A rectangular piece of plate glass about 10 by 16 by ¼ inch in size shall be adjusted in a level horizontal position about 3 inches above a similar sized mirror placed on a table. On the surface of the plate glass shall be placed a rectangular strip of filter paper of a grade similar to Munktell's Swedish No. 0 or Schleicher and Schull's No. 589 and of slightly larger size than the strip of the paper to be tested. The test piece of paper shall be about 10 inches long by 2 inches wide and shall be placed on the filter paper. Six metal rings, inside diameter ⅝ inch, outside diameter ¾ inch and weighing approximately 42 grams (the usual polariscope tube metal caps meet these requirements) shall be placed at equal intervals from each other on the paper to be tested and 1 drop (about 0.03 cc.) of the colored red oil shall be dropped on the paper through the hole in each ring successively by means of a small pipette or medicine dropper which delivers the proper sized drop. The temperature of the red oil shall be between 20 and 25 deg. C. during the test. The exact time to seconds that each drop of oleic acid is dropped on the paper shall be recorded and the exact time to seconds that the first trace of oil appears on the filter paper below, as seen by the reflection of the underside on the mirror, shall also be noted. The difference betwen the two times shall be recorded as the initial red oil penetration for each spot of the paper tested.

The above operation shall be repeated four times, using a

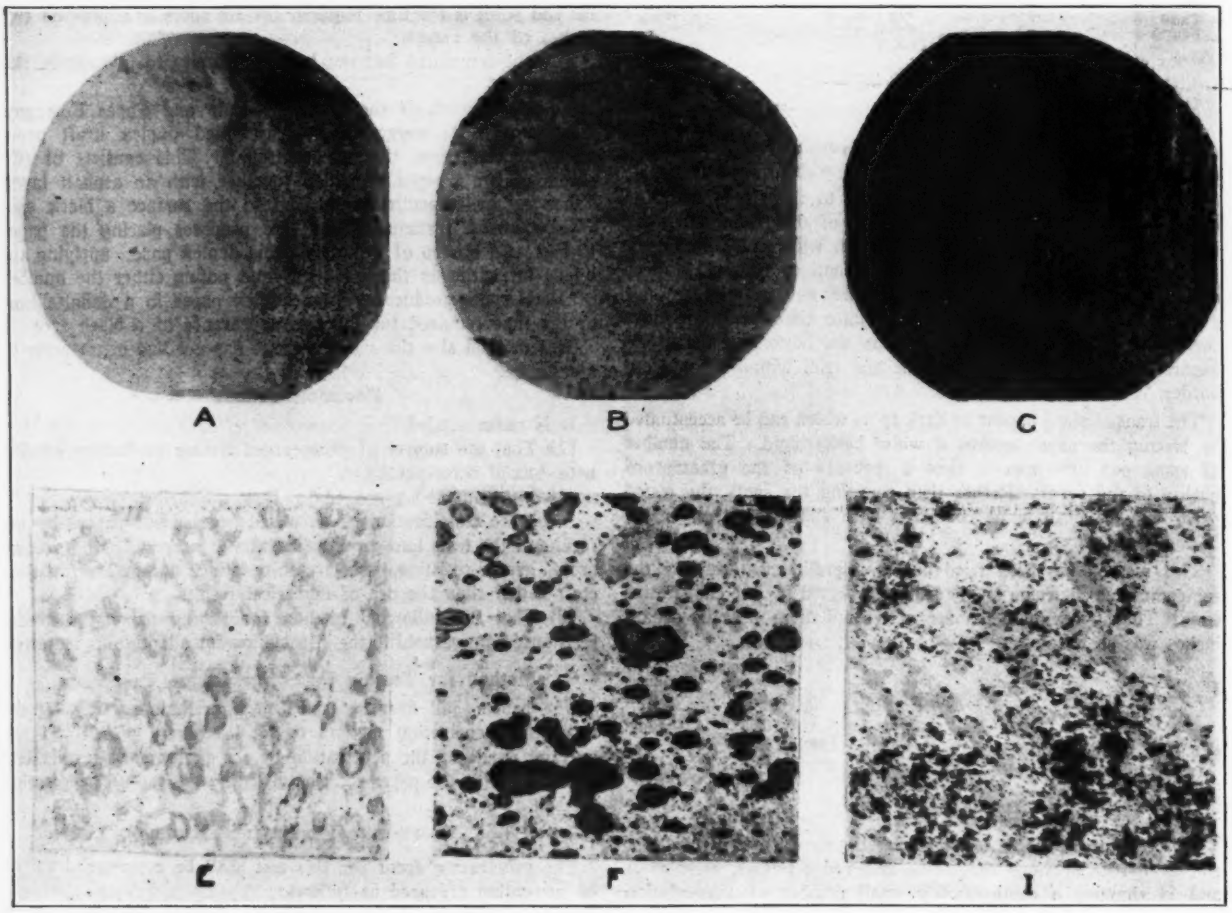



Fig. 2
**Penetration effects of colored turpentine. (One minute's exposure.)**

different representative strip of the paper to be tested each time; and then the 24 results obtained shall be averaged to obtain the initial red oil penetration of the paper, which shall be expressed finally in minutes and decimals. In low grade papers or where there is a wide lack of uniformity in the individual results, the process shall be repeated again, obtaining the average of 48 tests. With machine glazed paper an equal number of tests shall be made on each side of the paper.

The report shall state the number of tests, the maximum, the minimum and the average.

# Wood Evaluation for Soda Pulp Manufacture*

By H. W. Morgan [1]

Wood, the principal raw material used in the manufacture of chemical pulps has been and still is purchased without much definite knowledge of the amount of pulp it will yield. Usually, the only check on the quality of the wood is a visual examination by a scaler who grades the wood according to a set of standards which have been arrived at in a more or less arbitrary way. These standards have been designed to give as near as possible a definite volume of sound usable wood (or it's equivalent) for each purchase unit (cord). Allowances are made for various factors which tend to lower the quantity of satisfactory wood in a cord. Discounts are made for improper peeling, excess of knotty wood, crooked wood, decayed wood, undersized sticks, etc. Of all the conditions requiring discount by far the hardest to grade is decay. In many cases it is impossible to tell by the appearance of the stick how serious the decay is or how much it will affect the pulp yield. In the species used for soda pulp the estimation of the amount of decay is especially important because of the susceptibility of these species to decay. Aspen is particularly prone to fungus attack and is very susceptible to what is commonly known as white heart

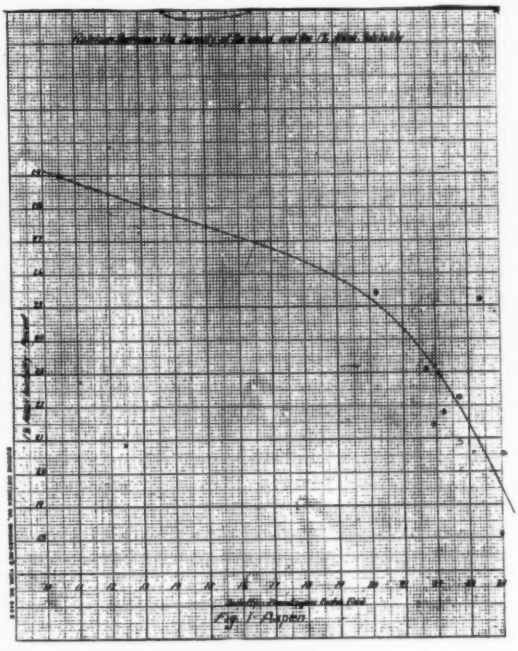


FIG. 1

rot. This type of decay reaches an advanced stage in the standing tree and the part of the stick affected is of little value for pulp. Certain estimated corrections are made for excessive amounts of this decay but it is never possible to express it in terms of actual loss.

A great deal of investigational work will be required before the purchase of wood can be controlled with precision. Several physical and chemical methods of evaluation have been developed but the greater part of these are too cumbersome for routine use or for use where a large number of samples are to be tested The determination of the amount of 1 per cent alkali soluble material in the wood is a relatively simple test which has been previously pointed out as a satisfactory means of evaluating the soundness of coniferous woods. However, very little has been published on the use of this test in the case of deciduous woods. The preliminary trials indicated that on these species it was somewhat erratic. Difficulty in obtaining check results was also experienced.

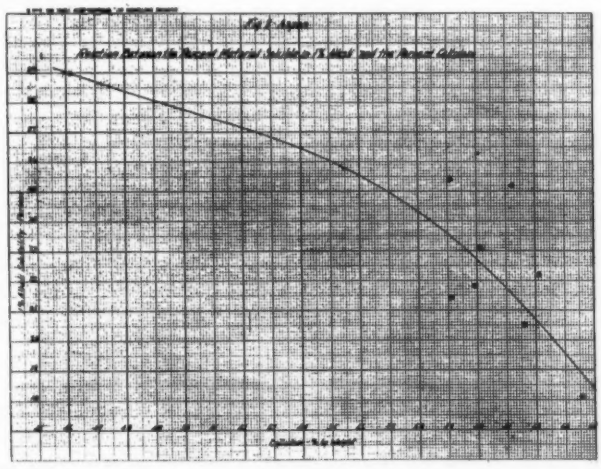


FIG. 2

### Alkali Soluble Test and Decay

The method in use was first investigated. This method consists of adding 100 cc of 1 per cent NaOH to a two gram sample of the wood sawdust in a 200 cc, tall form beaker, covering the beaker with a watch glass, and heating it in a pan of boiling water (or a water bath) for one hour. At the end of the heating period the material is filtered and washed successively with hot water, 10 per cent acetic acid, and hot water. After drying the weight loss is determined and expressed as percentage of oven dry wood soluble. Though the use of an open pan of boiling water for heating may not have been in universal use, the method of heating has not been described in detail, in the literature. It was found that the practice of heating the beaker containing the sample and alkali, in an open pan of boiling water, produced varying temperatures throughout the mass. It also produced varying average temperatures from test to test due to changes in the room temperature. To overcome this a water bath was designed in which the beakers could be placed so that they were completely surrounded by boiling water and steam. The bath used was of standard design, electrically heated, fitted with a cover. Holes were cut in this cover of a size such that a 200 cc tall form beaker would slip through until it rested on the beaker lip. During the heating period the beakers were covered by a watch glass and the contents were stirred according to a definite schedule. In this way a uniform

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of Alkaline Pulping Committee.

[1] Junior member TAPPI, Research Chemist, Oxford Paper Company, Rumford, Maine.

heating was obtained and the results of check tests were in much better agreement. This method due to the higher temperatures attained gave results which were slightly higher than those obtained in the previous method.

In order to study the relation of the 1 per cent alkali solubility to the degree of decay present, nine sample sticks of aspen, representing varying degrees of decay were selected from the storage piles. Each stick was graded according to the visible signs of decay. The results of this grading are indicated by the "apparent decay" figures in the tabulated results. These figures show gradations from 1 which is sound to 4 which is the most decayed. The densities of these samples were determined by the usual immersion method, and the alkali solubility by the method mentioned above. The cellulose content was determined by the method employed by Schorger[2] except that the short chlorinations recommended by Ritter[3] were used.

The feasibility of using a higher or lower concentration of alkali instead of the usual 1 per cent was investigated. The solubility of all samples in ½ and 2 per cent alkali was determined. It was thought that a change in concentration might make the test more sensitive to slight differences in degree of decay. It was found that although the solubility is considerably affected by the concentration of the alkali the relation between the solubility of different samples is unaffected by changes in concentration. That is, the difference is one of intensity only. This substantiates the opinion of Bray.[4]

### Other Properties of Aspen

In order to study the relation of the 1 per cent alkali solubility to the other properties of the aspen samples, the percentage by weight of cellulose, and the density (pounds per cubic foot) have been plotted against it (Figs. 1 and 2). While the plotted points are somewhat irregular in both cases, there is a very definite tendency for both the density and the percent cellulose to decrease with an increase in the 1 per cent alkali solubility. The relation is rather erratic in the case of the percentage of cellulose, but the one between the alkali solubility and density is quite definite. Because the yield of cellulose (or pulp) is dependent both on the density of the wood and on the per cent by weight of cellulose, these two factors have been combined as the pounds per cubic foot of cellulose, $\frac{(\text{Density} \times \text{per cent cellulose})}{100}$. Since the density and percentage cellulose both decrease with an increase in alkali solubility, the decrease in lbs/cu. ft. cellulose is even more marked. This is shown in Fig. 3. These results indicate a very definite relation and fall much closer to the plotted line than might be expected. Seven of the nine points are close to the curve and one of the others is not seriously out.

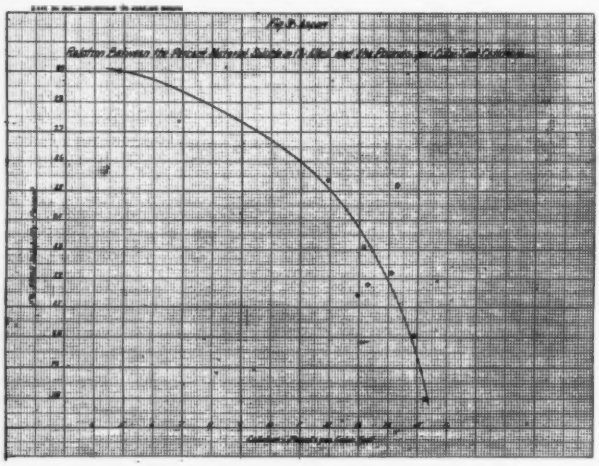


FIG. 3

In the nine samples there is a range in alkali solubility of from 18.1 to 29 per cent and a range of 15.26 to 4.85 pounds per cubic foot cellulose. This corresponds roughly to a loss of 0.9 pounds of cellulose per cubic foot for each 1 per cent increase in the 1 per cent alkali solubility or to express it differently, a loss of 3 per cent pulp yield for each increase of 1 per cent in the alkali solubility (assuming a 50 per cent yield for sound wood). Fig. 3 shows that changes in the potential pulp yield due to decay in the wood are accompanied by changes in the 1 per cent alkali solubility and that an approximate relation is possible between the solubility and yield. Because of the possible variation in individual cases, this relation is best suited for use under average conditions, such as, for the evaluation of a daily composite chip sample of mill wood supply. In such a case the variations in the original qualities of the different sticks are largely offset by the average and the alkali solubility becomes an even better measure of the loss in yield due to decay.

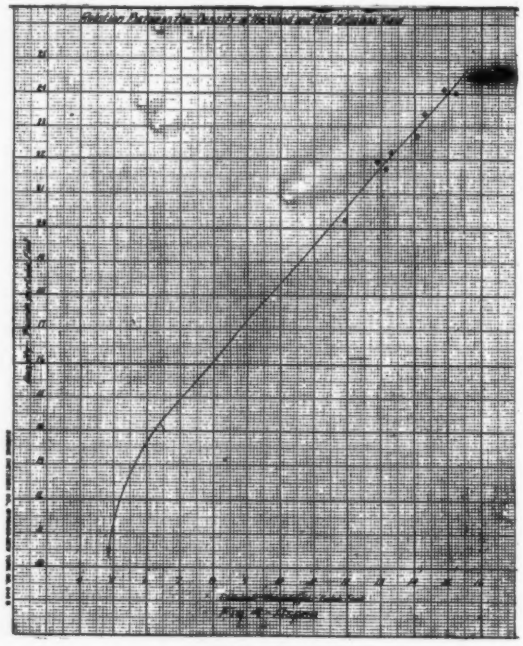


FIG. 4

During this work it became apparent that the yield of cellulose followed the density very closely and the relation between these two values is shown in the results plotted in Fig. 4. The density of the wood decreases as a straight line function with decreasing yields. It will be noted that all points fall very close to the plotted line.

To summarize, it has been found that the 1 per cent alkali solubility determination gives a good index of the degree of loss resulting from decay in a given sample of aspen wood. The test is easily carried out and should prove a valuable routine test for the control of wood quality.

ANALYTICAL DATA
ASPEN

| Sample Log-No. | Apparent Decay | Density lbs./ cu. ft. | Cellulose Per Cent by Weight | Cellulose lbs./ cu. ft. | Alkali ½% NaOH | Solubility—Per Cent 1% NaOH | 2% NaOH |
|---|---|---|---|---|---|---|---|
| 1 | 3 | 20.2 | 59.1 | 11.95 | 23.6 | 25.4 | 28.4 |
| 2 | 3 | 23.4 | 61.2 | 14.30 | 23.6 | 25.2 | 31.3 |
| 3 | 3 | 22.2 | 59.9 | 13.30 | 20.0 | 21.8 | 24.5 |
| 4 | 1 | 24.1 | 61.6 | 14.90 | 18.4 | 20.5 | 23.2 |
| 5 | 3 | 22.7 | 62.1 | 14.10 | 20.9 | 22.2 | 25.8 |
| 6 | 3 | 21.9 | 59.1 | 12.92 | 19.1 | 21.4 | 24.2 |
| 7 | 3 | 21.7 | 60.1 | 13.12 | 21.4 | 23.1 | 27.1 |
| 8 | 2 | 24.0 | 63.6 | 15.26 | 16.1 | 18.1 | 20.8 |
| 9 | 4 | 10.5 | 46.1 | 4.85 | 25.9 | 29.0 | 32.0 |

[2] J. Industrial and Engineering Chemistry 9-56 (1917).
[3] J. Industrial and Engineering Chemistry 16-94 (1924).
[4] U. S. D. A. Bulletin No. 1298—pp. 22.

Section of the

# COST DEPARTMENT

of the

American Paper and Pulp Association

Edited by T. J. Burke C. A. Director Cost Dept.

# Fundamentals And Company Policy*

By Charles W. Boyce[1]

I believe that the trade association can give assistance to its members quite beyond the scope of ordinary reports. Statistical reports combined with data on costs, raw materials, market conditions, the flow of trade and other allied subjects toward which the individual companies in the industry contribute information, form a vast background of accurate facts. Upon this background rests the best opportunity that an industry may have for an objective point of view. To my mind the chief function of a trade association is supplying its members not only with information by which they themselves may study the industry, but also and more importantly so, with objective conclusions arrived at by the organization staff itself.

### Industry Primarily Subjective

Industry is primarily subjective. It must be, for by its nature industry centers in self. Subjective plans relate, therefore, not so much to the industry as to the part that the one making the plans, may play in the industry. There are few men in the paper industry, whose subjective views are sufficiently broad to afford a properly balanced background of the industry as a whole. There are many, of course, whose subjective knowledge is amply sufficient for proper management of mills whose long run operations have been programmed in line with the broader movements in the industry. But the broader, impartial consideration of the industry's trends is needed in laying the sound basis of company policy. Fundamentals must be its source.

### Impartial Point of View

In the American Paper and Pulp Association we try to maintain a thoroughly impartial point of view in regard to all paper and pulp grades, as well as in regard to all regions, and in so far as possible to all countries. The American industry is a part of the world industry and the influence of conditions in any country affect those in all countries in some degree. This is particularly true in woodpulp. As a preliminary step in determining what these influences are likely to be, it is first necessary to know objectively what the industry is about.

The Association constitutes the best means that an industry has of obtaining the objective point of view. Yet many association executives do not think it advisable to draw conclusions. Subjective conclusions might well be inconclusive, but objective conclusions are of an entirely different character. Those actually engaged in the business of the industry are rarely in a position to devote the time to collect and coordinate the necessary information from the many sources that must be had for objective analyses. This is an association function.

* Address delivered at meeting of Cost Department of the American Paper and Pulp Association, on Wednesday, February 18, 1931, at the Pennsylvania Hotel.

[1] Sec., American Paper and Pulp Association.

### Trust Future for Paper Industry

It is perhaps easier to determine long-time trends than the detailed trends of the next six months. It is thoroughly agreed that there is a tremendous future for the paper industry in the United States. Paper consumption records in the United States, as well as in the world as a whole, fall along a straight line. These records indicate that the rate of consumption increase has not varied. If the trend lines are continued into the future at the same annual rate of increase, the world consumption of paper will reach two hundred and fifty million tons in 1975, approximately ten times the present consumption. But with the world consumption at two hundred and fifty million tons, per capita consumption will be no greater than it is in the United States at the present time.

Greater use of paper in the United States depends more upon new uses than upon greater per capita use. Greater use in other countries depends more largely upon the growing per capita consumption. With per capita in the world now at but a twentieth of the United States figure, think what the possibilities for the paper industry are in the other countries! Obviously, however, if there is a saturation point in paper, the United States is nearer to it than any other country. This means that the further expansion of the industry in this country is apt to be more difficult from a marketing point of view than the expansion in other countries.

### World Wood Pulp Industry Shifting

A tremendous shift in the world wood pulp industry is now in progress, not only between regions in the United States but between countries, and between grades of pulp. The position of the United States is becoming stronger each year, because there are tremendous supplies of wood in this country that can be manufactured into paper if processes for using them are developed. In the sulphate process and its modifications, we have the possibilities for using these woods.

Because of ample wood supplies for pulp, which exceed those in any other country, pulp wood is apt to be cheaper in the United States than in other countries. This is true at present insofar as Southern and Western woods are concerned. I do not think this price advantage is temporary. There is little doubt that under the proper management of land and integration between manufacture on the one hand and timberlands on the other, that the price advantages can be maintained, for growth rates of coniferous wood are greater over larger areas in the United States than in any other part of the world.

### Tremendous Opportunity in Export Trade

If this is true, there lies before the American industry then, a tremendous opportunity in export trade. Because of tariffs, export trade in paper is difficult throughout the world. Pulp, on the other hand, flows underneath these tariff walls. It is in wood pulp that the greatest play of economic forces is occurring.

At the present the United States industry obtains from its domestic forests approximately one-half of the wood needed to make the paper that is required in the United States. That amounts to over seven million cords of wood of a total of about fourteen million cords. Eight years ago only forty-five percent came from domestic forests. It is evident that the United States is already taking better advantage of its opportunities in the domestic market.

The present difficulty in the pulp industry, aside from the depressed business conditions in general, is that the needs for pulp in the United States were anticipated not only by the domestic industry, but in Europe as well. American needs in excess, say, of those of 1926, have been duplicated. This combined with the world business crisis has made a very bad situation in the pulp industry. This was bound to take place in some degree, however, because a new form of wood use has developed, not only in this country but also in Europe, the use of wood waste from other forms of wood manufacture.

Such wide spread movements are bound to affect the operation of individual companies. They must be considered in laying company plans. Business cannot now operate on a day by day plan. Company policy must be continuous; it must be stable. That plans may be stable, they must be based upon long-time trends and they must be harmonized with the broad movements in the industry. That is particularly true because, as we all know, the paper industry requires from thirty to forty years' operation to write off investments and to exhaust the possibilities of average installation.

For the individual company to determine these objective facts would practically require the duplication of an association organization. Even with such an organization it would be difficult to obtain the objective viewpoint. For these reasons, I believe that the best and in the long run the least expensive means of obtaining fundamental knowledge of the industry, is through your associations.

### Questionnaires Necessary

Your company reports play an important part in building up this store of knowledge. I have no doubt that the sight of questionnaires on your desk is not wholly pleasing, for they mean work, the results of which are frequently intangible. The questionnaires are necessary, however, for building up the background of the industry's movements with which you must coordinate your own operations. At the same time they give the Association staff means of developing further the objective point of view, which we get back to you in our publications and better still, in personal discussions. When all is said and done, the questionnaire and forms deserve favorable and expeditious handling.

# Accountant's Interest in Weight Control*

By Frank K. Billett, Toledo Scale Co., Toledo, Ohio

Every physical movement of stock from the time it enters the receiving dock until its departure from the shipping platform is a very possible drain on net profits unless the volume of this stock is accurately obtained in a uniform manner either by weight, count or measurement.

Any mistake in this movement record is carried into the accounting, leading to a misstatement of inventory values with a consequent wrong impression of profits for the period. This means that, if the inventory figures are incorrectly higher, a larger profit is shown than was actually earned. If these inventory figures are incorrectly lower than they should be, smaller profits are shown than were earned. In either case, a false record of earnings is shown.

It is found frequently that those mysterious discrepancies between expected profits and actual profits, as well as those unexplainable differences between the amount of raw materials and stock purchased and the amount of finished product produced therefrom, which so often have to be charged off as manufacturing losses, are, to a considerable extent, traceable to errors in the measurement of materials. Manufacturing losses are largely represented in a figure of difference between the amounts of materials on hand as shown by stock records and the actual physical quantity when counted at inventory time.

### Measurement Waste the Greatest

It has been said, and investigations made in hundreds of industrial plants justify the statement, that more money is lost by errors in the measurement of industrial materials than by fire, flood and other destructive elements. Fire and flood leave evidence of the loss, while the losses from errors made in the meausurement of materials are invisible and intangible, but go on day after day, and are both insidious and cumulative.

With the foregoing accepted generally by all classes of industry, and the knowledge that industry looks to accounting records for guidance and results, it follows that the Auditor, Treasurer or Chief Accountant, as the case may be, is interested very vitally in correct reports of stock movements.

Disbursements for materials (in other words, the payment of invoices covering purchases of material) must be based on exact quantities received. Inventory debits and credits during processing of this material must be based on exact quantities moved. This means that the total of raw material taken from stock and thence moving through all departments must check out exactly with the finished product. It can be seen readily that any error in weight or count at any point in the movement will cause a discrepancy in the amount of the finished product.

Manufacturing cost of sales is a term used in accounting to designate the total of labor, material and overhead which goes into the finished product; a broad definition is the actual cost of the product up to the time it is turned over to the Sales Department for distribution. This manufacturing cost of sales item must be based on exact quantities used. Should anyone of these movements be inaccurately reported, the profit showing is incorrect in a proportionate amount, with the great possibility of a write-off when physical inventory is taken.

### Receiving Errors Are Dangerous

By way of example, let us consider the error of a Receiving Department reporting 1,000 pounds on a shipment of brass priced at $25.00 per 100 pounds or $250.00 in value where the correct weight should have been 945 pounds or $236.25. The first result is an outlay of cost to the amount of $13.75 for which nothing was received. The second result is the entering of 1,000 pounds on stock control records whereas 945 pounds are in the stock bins. The third result is the actual write-off at the time of the regular physical inventory which reflects in the operating statement as a deduction from profits.

### Shipping Errors Cause Losses

At the other extreme of manufacturing, shipping the errors of weight and count reflect all the discrepancies brought up by recording receipts of incorrect amounts with the added hazard of incorrect freight bills and customers' unfavorable reactions. Customers, as a general rule, are fair minded, knowing that good business requires fair prices on merchandise meeting their specifications. However, one the question of quantity, they rightfully demand correct and accurate weights.

* N.A.C.A. Bulletin.

In short, they want and are entitled to receive what they have contracted to buy. Costly clerical hire to adjust these discrepancies is difficult to justify, in a competitive market and will lead in some cases, to actual loss of a customer.

Where the weight of the article sent is incorrectly stated on the bill of lading, the item of freight works to disadvantage in a two-fold manner. In case the shipper is paying the freight, inaccurate weights lead to an actual money loss on each shipment made which in even a very moderate business would amount to several hundreds of dollars in the course of the year. In case the customer is to pay the freight, it is even more important that he pay only the correct amount, as it is highly desirable, from a standpoint of continued sales, that his delivered cost be as low as possible. When it is brought to his attention that he is paying for excess weight on a freight bill, it simply builds up evidence in his mind of the carelessness with which the rest of his accounts may be handled.

### Two Main Divisions Affected

It is evident that two divisions are most vitally affected by such errors:—namely stock control and accounting. Stock control (the written records of stock received and stock issued) may be affected very seriously through delays or inability to meet the demand due to stock shortages, but the grave danger lies in the accounts where every error is sure to be reflected.

It goes without saying that the class of labor employed on receiving and shipping docks, as a usual practice, is not accounting minded and are more concerned in the disposal of materials than in the absolute accuracy of the records. Even if they are disposed to be accurate, they are not capable of handling accounts or complicated machine calulations to arrive at the result.

The men out in the plant seem to be quite content to say that this or that weighs "about" so much, or that the scales are "about" right, but, of course, if the figures furnished to the accounting Department are only "about" right, then, when they are converted into money values, the money values are only "about" right.

### Basic Figures Cannot Be Checked

Probably a reason for the continuation of this custom is the fact that it is extremely difficult, and in many cases impossible, for those in the Accounting Department to detect errors made by the men out in the plant in the measuring of materials. They have to accept these figures as furnished to them and put them into the records. These figures being practically basic figures in the accounting records, errors will not be disclosed by cross checking. It is therefore of great importance to the accuracy of the operating statement that modern mechanical methods of determining these values be employed. The interest of the disbursing officer is perhaps paramount in such equipment as with him lies the responsibility for a correct statement of values.

"Reserve for inventory losses" is an item set up during the year in the operating budget to meet expected inventory losses. This is done, however, only by accountants who fully realize the possibility that such losses may occur. This item, "reserve for inventory losses," will be found on the books of any corporation whose business requires various inventory accounts so long as obsolete methods of material control make such losses possible. They are viewed as a safety factor by Purchasing and Production Departments but the President sees them as an evil which he must attempt to explain to his directors but which he recognizes as a reflection on the management of his company.

Because the equipment with which materials are measured must, of necessity, be located out in the plant, and for other reasons mentioned later, it has for years been the custom to leave to those operating the various departments of the business, the selection, care and maintenance of this equipment.

The equipment used for the measurement of materials should be clearly distinguished from the machines used in manufacturing processes, since this weighing equipment, in general, performs no function in the changing of raw materials into finished product, but is in reality the representative of the Accounting Department, stationed out in the plant to obtain important figures for their records.

Now, as never before, management expects and demands use of methods and equipment which will control these heretofore hidden losses. The day is past when hand counts or complicated beam weighing computations satisfy the demand for dependable control of material receipts and shipments. The fallacy of records based on machine counters has been always inaccurate. It does mean, however, that when a machine operates without delivering the part manufactured, the machine counter registers an additional number. (This is more clearly understood if you can imagine an automobile with the rear wheels jacked up and the engine turning the real wheels. The speedometer would register distance when none is traveled.) Machine counters count every complete operation of the machine regardless of whether a part is made or not. Therefore, records taken from these machine counters may not be reliable. A multiplicity of distinguishable errors has pointed to an equal amount of ever present but somewhat intangible hidden losses which every year are mounting in our industry.

### Wage Payments

In establishing costs for manufactured articles, direct labor may be measured in time expended at regular day rate or in terms of units produced at a given price per unit. For example, the direct labor cost of an article may be ten hours per hundred at a day rate of 60 cents per hour or $6.00 per hundred labor cost. Again, it may have been predetermined that the average man can turn out these items at a rate of speed which allows a piece work charge of 60 cents per hundred on which his earnings are based From the latter method of payment, known as the piece work plan, has evolved the present group bonus system whereby the daily pooled production of a group is computed on a standard time basis. In other words, each part on each operation has a given standard time value which is credited to the individual group for their day's performance, and the efficiency of the group computed on the basis of actual hours worked to the standard hours of production credited to them.

Inasmuch as the successful operation of this system depends upon careful inspection of the product and accurate counts or weights, it is essential that all precautions be taken to avoid errors. In other words, machine counters or even piece work counting clerks are not satisfactory and are being replaced by accurate accounting equipment, which has proven superior in performance to the slower, costlier, hand counted method and has permitted the operation of large groups on productions at a minimum clerical expense and a mechanical accuracy of count.

It has built up in the group of workmen a confidence in the management which so adequately safeguards their earnings. In the operation of a piece work system, it is a question whether to (first) have the workman record the number of pieces on which he has completed a given operation or (second) —have a machine counter which records every time the machine is tripped or (third)—a piece work clerk to count the pieces produced. Any one of these three methods may be inaccurate for obvious reasons. It is speedier, simpler and less costly to determine production of the various piece workers over a mechanical counter than to jeopardize the accuracy of all stock records not to say the confidence of the workmen by resorting to the obsolete method of determining the amount of pay due for the production secured.

### Costs Depend on Material Weight

The standard cost of any article, to be of real value, must

include as a basis an accurate knowledge of weights of materials to be manufactured into the item, i. e., standard or normal weight of iron, steel, brass or other materials used to produce a given quantity. For example, if you are engaged in punching brass caps from sheet brass, it is essential that an accurate knowledge of the amount of sheet brass of a given gauge be determined before a standard cost can be established.

Should a workman become careless or have insufficient knowledge of his work, perhaps there would be a variance from this weight and the cost of the product arise in accordance with the loss of material. In the case of castings which are purchased at a given price per pound, there may be no variation in this pound price over a long period but an accurate check of the weight will indicate a higher cost due to the loading or wrapping of certain parts in the foundry. Unless difficulties in machining or the fabrication of these parts call attention of the Production Department to the faults in the manufacture and the excesses in weight, there are very good chances for a continuation of overpayment for this particular part.

In one case there was a variation from 2500 lbs. per hundred for a particular casting to 2900 lbs. per hundred for the same casting at the same fixed price of 12½ cents per pound which amounted to considerable money over a year's requirements, and which was only detected by making a spot check of the various lots that were received and holding the foundries to the weight tolerances specified in the original agreement.

When castings are purchased by the piece, it is essential that a check be made not only by the Receiving Department of the purchaser but also by the Production Department within the foundry. If this is not done, overweights in the foundry cause an excess amount of iron to be used with a resultant higher cost to the foundry. In the case of the purchaser it is important that they be held within certain tolerances as underweighted castings may break very readily in this product and cause an unusual amount of service, whereas castings which are over-weight may materially slow up production in such items as grinding or drilling.

### Profits Made in Production

If it is borne in mind that profits must be made throughout the various operations of manufacture and that they are not made in the final assembly of the product, it will be more reasonable to understand why a check of these weights from and through the various operations will prove highly profitable to a progressive management. In brief, if 1000 lbs. of material are received on the receiving dock of an industrial plant, 1000 lbs. should be accounted for at all time either in finished products or in scrap. Carelessness in weight or count in any stage of manufacture may jeopardize this balance and cause inexplainable shortages in inventory.

### Measurement by Weight More Reliable

As distinguished from measurement by area or volume, the measurement of materials by weight is constantly on the increase. Paints, oil and other liquids, textiles, grain, gases and many other commodities, which were formerly measured by area or volume, are now measured by weight, or are graded or classified by weight. Pieces which were formerly counted by hand are now counted by weight, on scales made for that purpose. For this reason the equipment used to measure materials by weight has become more important in the determination of costs, production and profits.

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## Acquires Georgia-Louisiana Corp.

The Paper Makers Chemical Corporation announces that it has acquired the business and chemical manufacturing properties of the Georgia-Louisiana Corporation at Atlanta, Ga., and Marrero, La. Operations in the future will be carried on under the name of the Paper Makers Chemical Corporation.

COST SECTION

# Trade Mark Department

CONDUCTED BY NATIONAL TRADE-MARK CO., WASHINGTON, D. C.

The following are trade mark applications pertinent to the paper field pending in the United States Patent Office, which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade Mark Company 900 F Street, N. W., Washington, D. C., trademark specialists. As an additional service feature to its readers, PAPER TRADE JOURNAL gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering.

PURITAN STERILIZED. Ser. No. 285,789.—Puritan Paper Plate and Products Company, Trumbauersville, Pa. For paper tableware—namely, forks and spoons.

DOROTHY GRAY. Ser. No. 309,069.—Dorothy Gray, New York City and Broomfield, N. J. For cleansing tissues.

CLOVER FARM Ser. No. 286,762.—The Grocers and Producers Company, Cleveland, Ohio. For toilet paper, paper napkins, wrapping paper, and wax paper.

STAYCEIN. Ser. No. 309,871.—A. E. Staley Manufacturing Company, Decatur, Ill. For material manufactured for use in the coating of paper and which is composed of casein and oxidized starch.

EVER-READY. Ser. No. 307,792.—The American News Company, Inc., New York City. For composition books, fountain pens, notebooks, book covers, ink and pencil erasers, papeteries, thin leads.

K-C, in a circle. Ser. No. 307,207.—Kimberly-Clark Corporation, Neenah, Wis. For printing papers.

GOLDENROD KRAFT. Ser. No. 310,808.—National Consumers Paper Corporation, New York City. For sulphate pulp kraft paper.

STALWART. Ser. No. 310,245.—Brooklyn Standard Bag Company, Inc., Brooklyn, N. Y. For paper bags.

PAC-COL. Ser. No. 309,861.—Iowa Fiber Box Company, Keokuk, Iowa. For dispensing boxes made principally of corrugated board.

SURETY. Ser. No. 310,244.—Brooklyn Standard Bag Company, Inc., Brooklyn, N. Y. For paper bags.

"DEFINITIV." Ser. No. 303.376, E. O. Haberfeld, Berlin, Germany. For all books and forms for bookkeeping, card files, card registers, etc.

RIEGEL'S GLEN TAG. Ser. No. 307,830. Riegel Paper Corporation, Riegelsville, N. J. and New York City. For sulphite tag paper and envelope paper.

BUCKEYE. Ser. No. 308,804. A. P. W. Paper Company, Inc., Albany, New York. For toilet paper and paper towels.

VICTOR. Ser. No. 308,806. A. P. W. Paper Company, Inc., Albany, N. Y. For toilet paper, tissue paper, crepe paper, and paper towels.

LINWEAVE OXFORD Ser. No. 303136. United States Envelope Company, Springfield, Mass. For correspondence paper and envelopes.

THE "P. P. P." PATENT PLATEN PRESERVER. Ser. No. 305,481. E. M. Glueck, doing business as The Typewriter Equipment Company, New York City. For backing sheets.

WEDGEWOOD. S58. No. 281,262. The Champion Coated Paper Company, Hamilton, Ohio. For mineral-coated paper suitable for printing.

LINWEAVE BRENTWOOD. Ser. No. 303,135. United States Envelope Company, Springfield, Mass. For correspondence paper and envelopes.

TELL IT BETTER—WRITE A LETTER. Ser. No. 307,650. American Paperterie Company, Albany, N. Y. For writing paper and envelopes.

COLOROTO. Ser. No. 308,654. Tonawanda Paper Company, Inc., Wilmington, Del. For news print paper.

CURLEX. Ser. No. 309,391. James S. Miller, Trenton, N. J. For paper head-rest covers in the form of towels.

DETECTO. Ser. No. 309,722. Baldwin Paper Company, Inc., New York City. For safety paper including a coated safety paper for printing labels and the like.

PERGALOID. Ser. No. 309,098. Carl Steiner, New York City. For paper and paper boards, being waterproof, insoluble in water, also greaseproof and oilproof

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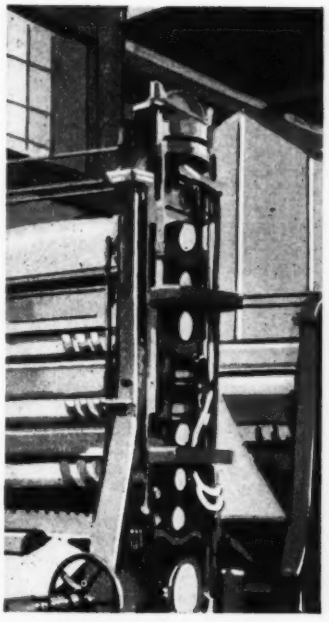

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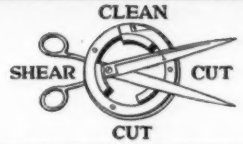
## LANGSTON
## Slitters & Rewinders



# IMPORTS OF PAPER AND PAPER STOCK

## NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

## NEW YORK IMPORTS

WEEK ENDING APRIL 4, 1931

### SUMMARY

| | |
|---|---|
| Cigarette paper | 18 bls., 3805 cs. |
| Paper hangings | 6 bls., 3 cs. |
| Wall paper | 34 bls., 9 cs. |
| News print | 840 rolls |
| Printing paper | 55 bls., 47 cs. |
| Wrapping paper | 4 rolls, 13 cs. |
| Packing paper | 119 bls. |
| Decalcomania paper | 19 cs. |
| Colored paper | 26 cs. |
| Filter paper | 33 bls., 82 cs. |
| Drawing paper | 5 cs. |
| Tissue paper | 10 cs. |
| Photo paper | 3 cs. |
| Aluminum paper | 8 cs. |
| Baryta coated paper | 60 cs. |
| **Metal coated paper** | **166 cs.** |
| Surface coated paper | 38 cs. |
| Greaseproof paper | 1 cs. |
| Cover paper | 4 cs. |
| Shelf paper | 7 cs. |
| Envelopes | 25 cs. |
| Writing paper | 1 cs. |
| Gummed paper | 1 cs. |
| Bowl paper | 4 bls. |
| Paste board | 15 cs. |
| Card board | 1 cs. |
| Miscellaneous paper | 267 cs. |

### CIGARETTE PAPER

De Manduit Paper Corp., Sarcoxie, Havre, 521 cs.
Champagne Paper Corp., Sarcoxie, Havre, 142 cs.
Brown & Williamson Tobacco Corp., Olympic, Southampton, 10 cs.
American Tobacco Co., Florida, Bordeaux, 1150 cs.
American Tobacco Co., Indep. Hall, Bordeaux, 750 cs.
De Manduit Paper Corp., Indep. Hall, Bordeaux, 1226 cs.
P. J. Schweitzer, De Grasse, Havre, 6 cs.
Max Speigel & Son, Pr. Fillmore, Genoa, 18 bls.

### PAPER HANGINGS

A. C. Dodman Jr., Inc., Andania, Liverpool, 6 bls., 1 cs.
Bush Service Corp., De Grasse, Havre, 1 cs.
Whiting & Patterson Co., Inc., Mauretania, Southampton, 1 cs.

### WALL PAPER

J. E. Bernard & Co., Berlin, Bremen, 2 bls.
R. F. Downing & Co., Tai Ping, Kobe, 12 bls.
F. J. Emmerich, Andania, Liverpool, 6 bls.
Guaranty Trust Co., New York, Hamburg, 10 cs.
F. A. Binder, New York, Hamburg, 14 bls., 8 cs.
Thomas & Pierson, Mauretania, Southampton, 1 cs.

### NEWS PRINT

Jay Madden Corp., Berlin, Bremen, 207 rolls.
Perkins Goodwin & Co., Berlin, Bremen, 52 rolls.
——, Berlin, Bremen, 90 rolls.
Jay Madden Corp., New York, Hamburg, 44 rolls.
——, New York, Hamburg, 32 rolls.
Parsons & Whittemore, Inc., Amer. Shipper, Hamburg, 215 rolls.

### PRINTING PAPER

International F'd'g Co., E. Francqui, Antwerp, 8 cs.
C. Steiner, Berlin, Bremen, 39 cs.
Perkins Goodwin & Co., New York, Hamburg, 55 bls.

### WRAPPING PAPER

Standard Products Corp., Westernland, Antwerp, 4 rolls, 13 cs.

### PACKING PAPER

J. P. Heffernan Paper Co., Westernland, Antwerp, 119 bls.

### DECALCOMANIA PAPER

Phoenix Shipping Co., Berlin, Bremen, 1 cs.
B. F. Drakenfeld & Co., Andania, Liverpool, 15 cs. (duplex)
C. W. Sellers, New York, Hamburg, 3 cs.

### COLORED PAPER

E. Daiber, E. Francqui, Antwerp, 3 cs.
Phoenix Shipping Co., Europa, Bremen, 2 cs.
S. Gilbert, Berlin Bremen, 8 cs.
——, Berlin, Bremen, 5 cs.
Phoenix Shipping Co., Berlin, Bremen, 5 cs.
Nat'l Freight F'd'g Co., New York, Hamburg, 2 cs.
American Express Co., New York, Hamburg, 1 cs.

### FILTER PAPER

H. Reeve Angel & Co., Inc., Amer. Banker, London, 12 cs.
H. Reeve Angel & Co., Inc., Mauretania, Southampton, 70 cs.
American Express Co., Floride, Bordeaux, 30 bls.
A. Giese & Son, Floride, Bordeaux, 3 bls.

### DRAWING PAPER

H. Reeve Angel & Co., Inc., Amer. Banker, London, 5 cs.

### TISSUE PAPER

F. C. Strype, Andania, Liverpool, 2 cs.
F. C. Strype, Conte Biancamano, Genoa, 4 cs.
American Express Co., New York, Hamburg, 4 cs.

### PHOTO PAPER

J. H. Schroeder Banking Corp., Europa, Bremen, 2 cs.
Globe Shipping Co., Europa, Bremen, 1 cs.

### ALUMINUM PAPER

Keller Dorian Paper Co., Berlin, Bremen, 8 cs.

### BARYTA COATED PAPER

D. F. Young, Berlin, Bremen, 10 cs.
Globe Shipping Co., Berlin, Bremen, 50 cs.

### METAL COATED PAPER

Globe Shipping Co., Berlin, Bremen, 135 cs.
M. A. Kerner, New York, Hamburg, 3 cs.
K. Pauli Co., New York, Hamburg, 26 cs.
Schenckers, Inc., New York, Hamburg, 2 cs.

### SURFACE COATED PAPER

Gevaert Co. of America, Westernland, Antwerp, 36 cs.
Phoenix Shipping Co., New York, Hamburg, 1 cs.
Titan Shipping Co., New York, Hamburg, 1 cs.

### GREASEPROOF PAPER

F. C. Strype, New York, Hamburg, 1 cs.

### COVER PAPER

International F'd'g Co., New York, Hamburg, 4 cs.

### SHELF PAPER

Kaplan Bros., Europa, Bremen, 5 cs.
Kaplan Bros., Berlin, Bremen, 2 cs.

### ENVELOPES

J. Beckhard, Berlin, Bremen, 25 cs.

### WRITING PAPER

Strauss Bros., Andania, Liverpool, 1 cs.

### GUMMED PAPER

Meadows Wye & Co., Amer. Banker, London, 1 cs.

### BOWL PAPER

Hurley Johnson Corp., Andania, Liverpool, 4 bls.

### PASTE BOARD

D'Orsay Perfumerie, De Grasse, Havre, 15 cs.

### CARD BOARD

E. Dietzgen & Co., Mauretania, Southampton, 1 cs.

### MISCELLANEOUS PAPER

Henschel Naeve & Co., Europa, Bremen, 7 cs.
D. F. Young, Berlin, Bremen, 4 cs.
Japan Paper Co., Tai Ping, Kobe, 50 cs.
S. F. Berliner, Tai Ping, Kobe, 5 cs.
Corn Exchange Bank, Tai Ping, Kobe, 11 cs.
Iwai & Co., Tai Ping, Kobe, 2 cs.
A. C. Cofod & Co., Olympic, Southampton, 1 cs.
Northern Mercantile Co., Inc., Malayan Prince, Hong Kong, 15 cs.
Standard Products Corp., De Grasse, Havre, 158 cs.
A. Flinn, De Grasse, Havre, 6 cs.
W. Busch, New York, Hamburg, 4 cs.
Davies Turner & Co., Amer. Shipper, Hamburg, 3 cs.
R. H. Macy & Co., Inc., Pr. Fillmore, Genoa, 1 cs.

### RAGS, BAGGINGS, ETC.

Irving Trust Co., E. Francqui, Antwerp, 20 bls. rags.
——, Berlin, Bremen, 5 bls. rags.
Darnstadt Scott & Courtney, Berlin, Bremen, 70 bls. bagging.
C. Nelson, Caledonia, Glasgow, 32 bls. rags.
H. W. T. Mali & Co., Sarcoxie, Dunkirk, 59 bls. flax waste.
E. J. Keller Co., Inc., Sarcoxie, ——, 60 bls. bagging.
J. Cohen Son & Co., Inc., Andania, Liverpool, 85 bls. rags.
——, Floride, Havre, 18 bls. rags.
Guaranty Trust Co., Floride, Havre, 576 bls. rags.
——, Floride, Bordeaux, 156 bls. rags.
E. J. Keller Co., Inc., Indep. Hall, ——, 85 bls. rags.
Katzenstein & Keene, Inc., Indep. Hall, St. Nazaire, 278 bls. rags.
Castle & Overton, Inc., Indep. Hall, St. Nazaire, 87 bls. rags.
Congoleum Nairn Co., Indep. Hall, St. Nazaire, 120 bls. rags.
R. Canovai & Son, Cabo Mayor, Leghorn, 50 bls. rags.
E. J. Keller Co., Inc., Cabo Mayor, ——, 32 bls. rags.
S. Birkenstein & Son, Cabo Mayor, Barcelona, 72 bls. rags.
P. Berlowitz, Cabo Mayor, Barcelona, 164 bls. rags.

### OLD ROPE

Chemical Bank & Trust Co., E. Francqui, Antwerp, 58 coils.
Irving Trust Co., Floride, Havre, 63 coils.
W. Steck & Co., Cabo Mayor, Marseilles, 49 rolls.

### CASEIN

Kalbfleisch Corp., Amer. Legion, B. Ayres, 84 bags.

### WOOD PULP

A. P. W. Paper Co., Nidareid, Sheet Harbor, 10264 bls. wood pulp.
Castle & Overton, Inc., New York, Hamburg, 532 bls. wood pulp, 86 tons.
——, New York, Hamburg, 260 bls. wood pulp, 52 tons.

### WOOD PULP WADDING

Bendix Paper Co., New York, Hamburg, 40 bls.

## PHILADELPHIA IMPORTS

WEEK ENDING APRIL 4, 1931

Strawbridge & Clothier, Floride, Havre, 3 cs. writing paper.
——, Floride, Havre, 1588 bls. rags.
E. J. Keller Co., Inc., Floride, ——, 144 bls. rags.
Castle & Overton, Inc., Floride, Bordeaux, 475 bls. rags.
——, Floride, Bordeaux, 944 bls. rags.
——, Floride, Calais, 538 bls. rags.

*(Continued on page 60)*

**FAIRBANKS**

*OFFERS A NEW*

**"SPHERO" VALVE**

***ACCESSIBILITY:*** **Removal and replacement of Seat Rings and Ball Plug effected without removing the body of the valve from the pipe line.**

***ADJUSTABILITY:*** **Exact adjustment of the Seat Rings accomplished by a simple turn of the wedge adjusting screw.**

***OPERATION:*** **Universal in its application. Quick-opening, requiring only a quarter turn to open or close. Gives a leakproof, tight seal on any service.**

*Available in any metal that can be cast. Made in sizes ½" to 8" inclusive; ½" to 4" are lever operated; 4", 6" and 8" are worm-and-gear operated.*

*Write for Descriptive Bulletin V-103.*

**FAIRBANKS COMPANY**

BOSTON NEW YORK PITTSBURGH

*Distributors Everywhere*

29-
30-
31-
32-
33- **TYPES** *of*
**SILICATES** *of* **SODA**

**QUARTZ QUALITY**

**WE specialize exclusively in sodium silicate—thus every effort is aimed toward these objectives; the production of good silicates, the building of adequate facilities for prompt deliveries, and the helpful co-operation with the manufacturers in their proper use.**

**Philadelphia Quartz Company**

*General Offices and Laboratory*

121 S. THIRD STREET, PHILADELPHIA

*Chicago Office:* 205 W. Wacker Drive

WOOD PULP AGENTS

**PRICE & PIERCE, Ltd.,**

17 EAST 42ND ST.

NEW YORK

*Wood Tanks*

*are not Corrodible*

Half-Round Stuff Chests made of 3-inch Genuine Red Gulf Cypress with heavy Yellow Pine bracing. Built and erected in the Frank Smith Paper Mill at Middletown, Ohio.

*The Hauser-Stander Tank Company*

Cincinnati Ohio

Wood tanks for every purpose in the paper mill, accurately made and only the best material and workmanship are used in their construction.

# Imports of Paper and Paper Stock

*(Continued from page 58)*

E. J. Keller Co., Inc., Indep. Hall, ——, 207 bls. rags.
Castle & Overton, Inc., Indep. Hall, Bordeaux, 31 bls. rags.
H. G. Lichtenstein, Indep. Hall, Bordeaux, 301 bls. rags.
J. Lang Paper Co., Indep. Hall, St. Nazaire, 180 bls. rags.
F. Weber & Co., Waukegan, Havre, 1 cs. paper.
Darmstadt Scott & Courtney, Waukegan, Havre, 63 bls. jute waste.
Katzenstein & Keene, Inc., Waukegan, Dunkirk, 176 bls. rags.
E. J. Keller Co., Inc., Ossining, ——, 714 bls. wood pulp; 124 bls. rags.

## BALTIMORE IMPORTS

WEEK ENDING APRIL 4, 1931

S. Shapiro & Son, Sarcoxie, Dunkirk, 80 bls. rags.

## Awards for Government Papers

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 8, 1931—The Mathers-Lamm Paper Company has been awarded the contract for furnishing the Government Printing Office with 50,000 pounds of No. 2 quality binders board at 3.375 cents per pound and the Consolidated Paper Company will furnish 30,000 pounds, same 36 pounds, at 3.375 cents. The Virginian Paper Company will furnish 1,100 sheets green gummed paper at $15.00 per M and Charles Engelhard, Inc., will furnish 50 rolls of cross section chart paper at $3.05 per roll. Bids for all of these items were received on March 6.

Barton, Duer & Koch Paper Company will furnish 36,000 pounds (18,900 sheets) of hard rolled binders board at 5 cents per pound, bids for which were received on February 27.

## New Treatise on Leather Belting

Professor Haven and Professor Swett, of the Massachusetts Institute of Technology, have prepared a scientific treatise on the subject of Leather Belting, its manufacture, methods of use, proper care, etc. This book has been financed by the American Leather Belting Association. However, it contains absolutely nothing of an advertising nature. All the larger American manufacturers contributed such information as they had, pertinent to this work. There was also available a large mass of research material and scientific analysis. The authors have culled and analyzed this data.

In the preparation of this treatise, at least four groups of users were kept in mind. In the first place, it was hoped that it would give the purchasing agent an intelligent idea of the material which he is buying and supply him with sufficient information as to the necessary specifications and inspection to insure his getting the quality of material which he may specify.

The second class considered was the ordinary millwright, who has charge of the installation and care of the belt after it is bought. The chapter on Belt Practice and the chapter on Installation and Care of Leather Belting are intended primarily to cover this field.

The third group for which this book was prepared was for the mill engineer. The methods of computing installations have been carefully gone into both from the practical and the theoretical side. All the research work that has been done is included and the result shown.

Fourth, it is the hope of the Engineering Committee who engaged the professors to write this treatise on the above lines that the book should be a valuable reference work for not only such mill engineers but also to engineering students, both undergraduate and graduate. For this purpose, a large number of extensive mathematical tables and original nomographic charts have been included. Such tables, of course, have been those selected as valuable to the ordinary mill engineer.

These tables and charts deserve specific mention. The trigonometric tables are carried out on the basis of degrees and decimal fractions thereof, rather than on the old conventional ideas of degrees, minutes and seconds. This materially facilitates computations. All tables are simplified to cover the range of accuracy found in the usual data of mill engineering practice. In other words "the significance of figures" has not been lost sight of and the tables provided require a minimum of work in computation and assure results within the accuracy of data available.

Nomographic charts are one of the latest and most valuable tools in engineering computation. The charts provided are new and original to the industry. They have been carefully selected as to value in the usual mill problem and should be a source of interest and value to the student and engineer.

## Boston Paper Market Firmer

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 6, 1931—A better tone has developed in the Boston paper market in both fine and wrapping lines. In fine paper there has been more activity in the latter half of the week under review. While there are not many large orders being actually placed, more consumers are looking about the market, with a fairly satisfactory number buying in small quantities. Furthermore, some business of substantial size is being figured on. Considerable interest is shown in book papers and envelopes. Glazed papers for covering boxes is in better demand. Many are encouraged by the fact that they received a larger volume of orders in March than in February and that April has started well.

Movement of wrapping paper has been accelerated by the bright spring days, which have brought tremendous crowds into the stores. It is felt also that at least to a slight degree the improvement in the unemployment situation has brought about somewhat freer buying. Some of the wrapping paper dealers feel that with more seasonable weather and a betterment in business generally the diamond for this commodity will become even more satisfactory. The movement of wrapping paper cannot exactly be called general, but it is certainly more lively in some quarters. An advance of ¼c has been made in Southern kraft by the manufacturers and No. 1 kraft has also been moved up the same amount. There is a fair business in specialties. The improvement in the shoe business the last few weeks has increased the demand for tissues for wrapping footwear. Specialties used by textile manufacturers have been moving fairly well and the outlook is good.

More customers than for some time are in the market for box board, but they are purchasing in smaller quantities, compared with the car-load lots usually ordered. More activity in the folding box trade has developed. Many concerns are now using heavy board cases for packing. Prices are firm. Paper stock has been quiet and featureless. Values are unquotably changed.

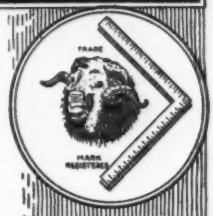
## Rains Cause Rise in Connecticut River

[FROM OUR REGULAR CORRESPONDENT]

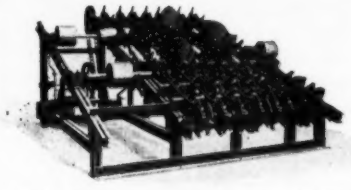
HOLYOKE, Mass., April 7, 1931—Rain and melting snow has caused some rise in the Connecticut River but not as yet sufficient to impair the power of the mills on the riverbank. Electricity for use in the paper mills is now being wholly generated by water. Progress is going on rapidly in the new power station by the Holyoke Water Power Company on the riverbank.

# 3 FEATURES of our "TOP FELTS for BOARD MACHINES"

A Trial Felt for Your Machines Will Prove These Facts.



THE WATERBURY FELT CO., SKANEATELES FALLS, N.Y.



*Made in any size or any number of Saws*

## PULPWOOD SLASHERS

MURRAY'S Pulpwood Slashers are standard equipment in many of the foremost mills in the U. S. and Canada.

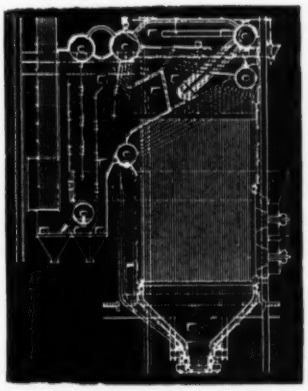
Extra-husky frame, bearings that stay in alignment, cradle-chains that allow the very minimum of movement while logs are being cut—all mean durability. Safety Friction Feed that prevents breakage of parts or ruining of saws by a jam is an extra service factor that makes this slasher even more long-lived.

Built to your needs in almost any capacity. WRITE for full information.

***We Manufacture—***

**Barking Drums, Chippers (direct-connected or Belted Roller-bearing), Chip Screens, Slab and Edging Barkers, Barket and Knot Saws, Bucket Elevators, Cut-Off Saws, Log Hauls, Conveyors (all kinds) Winder Hauls, Disc Evaporators, Agitators, Sulphur Burners and all other items.**

D. J. MURRAY MANUFACTURING COMPANY
WAUSAU WISCONSIN



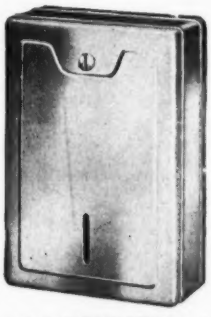
## BADENHAUSEN STEAM GENERATING UNITS

**installed in some of the largest pulp and paper mills in the United States and Canada**

MAXIMUM STEAM
AT
HIGHEST EFFICIENCY
WITH
LEAST CAPITAL INVESTMENT and OPERATING COSTS

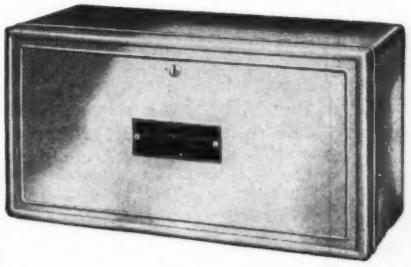
**Result:—Enormous savings in cost of pulp and paper produced.**

BADENHAUSEN CORPORATION
General Offices and Works
CORNWELLS HEIGHTS (PHILA.), PA.



# GRIFFITH-HOPE

Dispensing Cabinets
AND
Fixtures
ARE
The STANDARD of the PAPER TRADE
**For Towels, Toilet, Napkins, Etc.**



GRIFFITH-HOPE CO., West Allis, Wisc.

# LATEST MARKET REVIEW

## New York Market Review

Office of the PAPER TRADE JOURNAL.
Wednesday, April 8, 1931.

Conditions in the local paper market were fairly satisfactory during the past week. Demand for the various standard grades of paper was moderately active. The movement of supplies into consumption was seasonal. Sales forces of the leading paper houses are conducting a strenuous campaign for new orders. Prices are holding to schedule, in most instances.

Production of news print paper is being maintained in sufficient volume to take care of current requirements. Efforts to stabilize the industry are still being made, although there are many obstacles in the way of the proposed consolidations. The price situation is practically unchanged and the outlook for the future is uncertain.

Demand for the various grades of paper board is gradually improving. Box board is moving in better volume. No radical price changes have been reported of late. The fine paper market continues to exhibit a strong undertone, with prices steady and unaltered. Tissues are going forward in seasonal volume. The coarse paper market is fairly active. Kraft wrapping paper quotations are well maintained.

### Mechanical Pulp

The ground wood market is in a sound position, although trading has been rather quiet. Production in North America and abroad has been curtailed somewhat and offerings of both domestic and foreign mechanical pulp are not excessive. There are a fair number of inquiries around for future account. Prices are generally holding to previously quoted levels.

### Chemical Pulp

Steadiness prevails in the chemical pulp market. While the Norwegian pulp mill workers are still out on strike, the situation in this country has not been affected in any way. Imported bleached sulphite is still quoted at from $2.60 to $4.25, on deck, Atlantic ports; while domestic bleached sulphite is selling at from $2.40 to $4.75, f.o.b., pulp mills.

### Old Rope and Bagging

The old rope market was very quiet. The paper mills are not showing much interest in either domestic or imported old manila rope at present. Small mixed rope is only moving in moderate volume. The bagging market is irregular. While roofing bagging is fairly active, demand for gunny and scrap is limited. Bagging prices are somewhat easier.

### Rags

Little improvement was noticed in the domestic rag market. Cotton rags were only in moderate request during the past week. Demand for domestic roofing rags, however, was fairly satisfactory. Mixed rags are moving in fair volume. Domestic rag prices are irregular. The imported rag market continues dull, the only grades arousing much interest being the roofing ones. Prices are easy.

### Waste Paper

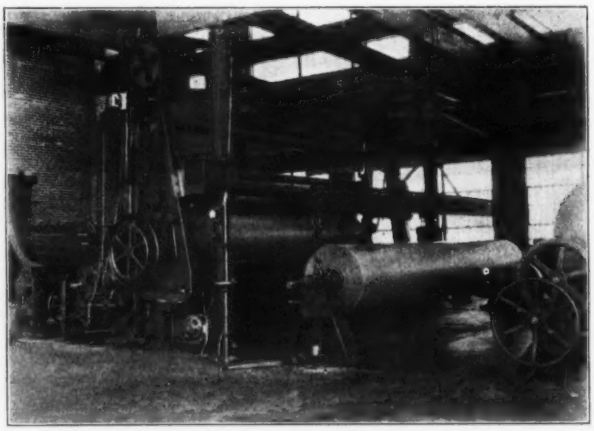
Improvement experienced in the paper stock market is fairly well maintained. The better grades of waste paper are steady, especially hard and soft white shavings and white envelope cuttings. Book stock is firmer, with offerings rather limited. The board mills are beginning to display more interest in the lower grades of paper stock and the outlook all around is more encouraging than for some time past.

### Twine

The twine market was only moderately active during the past week. Most of the business transacted was for immediate requirements and along routine lines. Inquiries received for future account were fairly numerous. Prices are generally being maintained at previously quoted levels, although there have been reports of shading on extra desirable orders.

## New Winders at Albemarle-Chesapeake Mill

The illustration presented below shows a rear view of Camachine 20 installed a few months ago at the mill of the Albemarle-Chesapeake Company, Inc., at West Point, Va. This winder is



NEW 236-INCH CAMACHINE AT WEST POINT, VA.

located behind a kraft paper making machine and is 236 inches wide. Rolls up to 60 inches in diameter may be wound on this machine and it may be run at speeds up to 3,000 f.p.m.

## Donald E. Brawn Joins American Writing

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., April 7, 1931—Donald E. Brown, formerly for 24 years associated with the Strathmore Paper Company of Mittineague and Woronoco has joined the sales staff of the American Writing Paper Company, Inc. He has had a large experience in creating and selling new and novel specialty fine papers. He served in the world war for 16 months, 11 months overseas with the Co. H, 127th infantry, 32d division.

## Ross Equipment for Appleton Coated Paper

The J. O. Ross Engineering Corporation is supplying for the Appleton Coated Paper Company, Appleton, Wis., a Reflex Drying System for No. 8 Coating Line also Fan Apparatus for No. 8 coating line (floater). This apparatus was designed with the assistance of Wm. T. Schenk, engineering for the Appleton Coated Paper Company.

# Union Screen Plate Company

Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

## UNION BRONZE

SCREEN PLATES FOR FLAT SCREENS

6 SLOTS—5 SLOTS—4½ SLOTS—4 SLOTS—PER INCH

**Old Plates Reclosed and Re-cut to Accurate Gauge**
**Rolled Phosphor Bronze and Copper Plates for Rotary Screens**

*Sole Manufacturers of the Union Witham Screen Plate Vat and Fastener*

# TRIUNE

AND

# MULTIPLE PLY DRYER FELTS

Serve every Felt Purpose in an efficient and satisfactory way.

**ENGLISH or BAKER WOVEN**

Made in three, four, five and six ply—60″ to 214″ wide.

**FITCHBURG DUCK MILLS**
**FITCHBURG, MASS.**

***For 87 Years Makers of Fine Faced Felts For Papermakers***

**1864** **1931**

# "EXCELSIOR" FELTS

**for every grade of**

## PULP AND PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made the first endless paper machine felts manufactured in America.

**Seamless felts for fast running.**
**Satin Style felts for finish.**
**Special felts to meet every condition.**
**Send us your felt problems.**

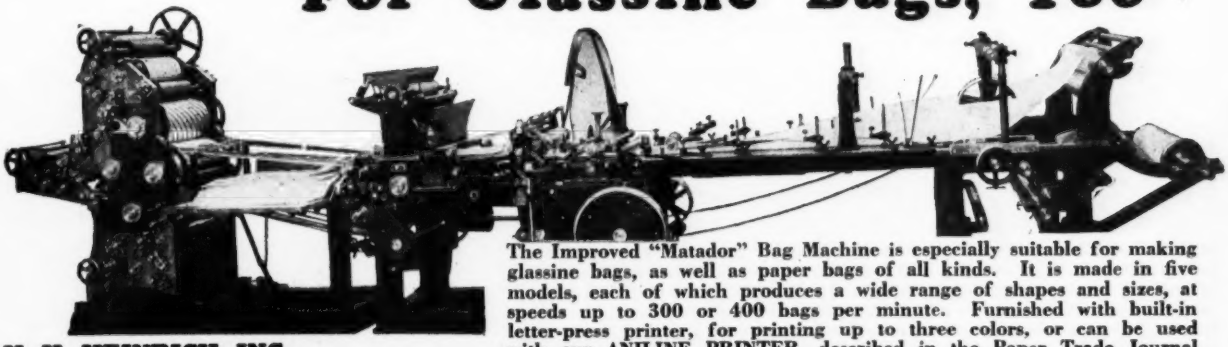
**KNOX WOOLEN COMPANY**
**CAMDEN, MAINE**

**SOLD BY**

**BULKLEY, DUNTON & COMPANY**

**75-77 Duane St., N. Y., and direct**

# For Glassine Bags, Too



**The Improved "Matador" Bag Machine is especially suitable for making glassine bags, as well as paper bags of all kinds. It is made in five models, each of which produces a wide range of shapes and sizes, at speeds up to 300 or 400 bags per minute. Furnished with built-in letter-press printer, for printing up to three colors, or can be used with our ANILINE PRINTER, described in the Paper Trade Journal for January 8th. Complete information and names of users will be mailed on request.**

**H. H. HEINRICH, INC.**
**200 Varick St., New York**

# Miscellaneous Markets

Office of the PAPER TRADE JOURNAL.
Wednesday, April 8, 1931.

BLANC FIXE.—Conditions in the blanc fixe market are practically unchanged. Shipments against contract are moving in fair volume. Prices are steady. The pulp is quoted at from $42.50 to $45.00 per ton, while the powder is selling at from 3¾ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—While demand for bleaching powder was rather quiet during the past week, the industry is in a sound position. The contract movement is seasonal. Prices are holding to schedule. Bleaching powder is quoted at from $2.00 to $2.35 per 100 pounds, in drums, at works.

CASEIN.—There were no further changes in the casein market. Domestic standard ground is still quoted at 8 cents and finely ground at 9 cents per pound. Argentine standard ground is selling at 9½ cents and finely ground at 10 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Some improvement was noticed in the soda ash market. The contract movement was fairly heavy. Prices are holding to former levels. Solid caustic soda is quoted at from $2.50 to $2.55; flake and ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market is exhibiting a fairly strong undertone. Contract shipments are going forward to the paper mills in good volume. Imported china clay is quoted at from $13 to $21 per ton, while domestic paper making clay is selling at from $8 to $13 per ton, at mine.

CHLORINE.—Trading in the chlorine market was moderately active. The contract movement was fairly satisfactory for the time of year. Prices are being maintained at previously quoted levels. Chlorine is selling at $2.50 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—Steadiness continues to prevail in the rosin market. Prices are unchanged. The grades of gum rosin used in the paper mills are quoted at from $5.90 to $6.30 per 290 pounds, in barrels, at yards. Wood rosin is selling at $4.50 per 280 pounds, in car lots, at southern shipping points.

SALT CAKE.—Most of the business transacted in the salt cake market was along routine lines. The contract movement was normal. Prices are steady. Salt cake is quoted at from $16 to $17; German salt cake at from $15.50 to $16; and chrome salt cake at from $14 to $15 per ton, in bulk, at works.

SODA ASH.—Demand for soda ash was rather light. Shipments against contract, however, continue to go forward to the paper mills in good volume. Contract quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.00; in bags, $1.15; and in barrels, $1.38.

STARCH.—Although the starch market was only moderately active during the past week, the industry is in a sound statistical position. Prices are holding to the recently revised levels. Special paper making starch is selling at $2.67, in bags; and at $2.94 per 100 pounds, in barrels.

SULPHATE OF ALUMINA.—The sulphate of alumina market is displaying a steady trend. Demand is fairly persistent and the contract movement is normal. Commercial grades are quoted at from $1.25 to $1.40; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—Supplies of sulphur are going forward at a steady pace. Prices are firm. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton for any smaller quantity over that period. On spot and near by car loads the quotation is $21 per ton.

TALC.—No radical changes were reported in the talc market. Business is quiet at present. Prices are holding to schedule, however, without difficulty. Domestic talc is quoted at from $16 to $18 per ton, in bulk; while imported talc is selling at from $18 to $22 per ton, in bags, ship side.

# Market Quotations

## Paper

(F. o. b. Mill)

| | | | |
|---|---|---|---|
| Ledgers | 11.00 | @ | 38.00 |
| Bonds | 6.75 | @ | 53.25 |
| **Writings—** | | | |
| Extra Superfine | 14.00 | @ | 32.00 |
| Superfine | 14.00 | @ | 32.00 |
| Tub sized | 10.00 | @ | 15.00 |
| Engine sized | 6.75 | @ | 11.00 |
| **Book, Cased—** | | | |
| S. & S. C. | 5.50 | @ | — |
| M. F. | 5.25 | @ | — |
| Coated and Enamel | 7.00 | @ | 10.50 |
| Lithograph | 7.50 | @ | 12.00 |
| **Tissues—Per Ream—** | | | |
| White No. 1 | .65 | @ | .67½ |
| Anti-Tarnish M G only | .65 | @ | .70 |
| Colored | .70 | @ | .90 |
| White No. 2 | .55 | @ | .57½ |
| Kraft | .65 | @ | .70 |
| Manila | .55 | @ | .57½ |
| **Manila—** | | | |
| No. 1 Jute | 9.00 | @ | 9.25 |
| No. 2 Jute | 7.75 | @ | 8.50 |
| No. 1 Wood | 4.00 | @ | 5.25 |
| No. 2 Wood | 3.50 | @ | 4.00 |
| Butchers | 3.37½ | @ | — |
| **Fibre Papers—** | | | |
| No. 1 Fibre | 4.25 | @ | 5.50 |
| No. 2 Fibre | 4.00 | @ | 4.75 |
| Common Bogus | 1.50 | @ | 3.00 |
| Screenings | 2.00 | @ | 3.00 |
| Card Middles | 4.00 | @ | 5.00 |
| **Glassine—** | | | |
| Bleached, basis 25 lbs., No. 1 | .09¼ | @ | — |
| No. 2 | .11¼ | @ | — |
| Bleached, basis 20 lbs. | .11¼ | @ | — |
| (Delivered New York) | | | |
| **News, per ton—** | | | |
| Rolls, contract | 62.00 | @ | — |
| Rolls, spot | 62.00 | @ | — |
| Sheets | 67.00 | @ | — |
| Side Runs | 47.00 | @ | 52.00 |
| **Kraft—** | | | |
| No. 1 Domestic | 4.25 | @ | 5.30 |
| No. 2 Domestic | 3.50 | @ | 4.00 |
| Southern | 3.50 | @ | 4.00 |
| Imported | 6.00 | @ | 7.00 |
| **Boards—per ton—** | | | |
| News | 30.00 | @ | 32.00 |
| Straw | 40.00 | @ | 45.00 |
| Chip | 30.00 | @ | 32.00 |
| Binders' Boards | 65.00 | @ | 70.00 |
| Standard 85 Test Liner | 35.00 | @ | 40.00 |
| Sgl. Mla. Ll. Chip | 42.50 | @ | — |
| (F. o. b. Mill) | | | |
| Wood Pulp Boards | 70.00 | @ | 80.00 |

## Mechanical Pulp

(On Dock)

| | | | |
|---|---|---|---|
| **No. 1 Imported—** | | | |
| Moist | 28.00 | @ | 32.00 |
| Dry | 30.00 | @ | 34.00 |
| (F. o. b. Mill) | | | |
| No. 1 Domestic | 28.00 | @ | 34.00 |

## Chemical Pulp

(On Dock, Atlantic Ports)

| | | | |
|---|---|---|---|
| **Sulphite (Imported)—** | | | |
| Bleached | 2.60 | @ | 4.25 |
| Easy Bleaching | 2.25 | @ | 2.40 |
| No. 1 strong unbleached | 2.00 | @ | 2.35 |
| Mitscherlich unbleached | 2.10 | @ | 2.70 |
| No. 2 strong unbleached | 1.90 | @ | 2.00 |
| No. 1 Kraft | 1.40 | @ | 1.75 |
| No. 2 Kraft | 1.35 | @ | 1.55 |
| **Sulphate—** | | | |
| Bleached | 2.75 | @ | 3.25 |
| (F. o. b. Pulp Mill) | | | |
| **Sulphite (Domestic)—** | | | |
| Bleached | 2.40 | @ | 4.75 |
| Easy Bleachings | 2.55 | @ | 2.75 |
| News | 1.80 | @ | 2.50 |
| Mitscherlich | 2.50 | @ | 3.25 |
| Kraft (Domestic) | 1.60 | @ | 2.75 |
| Delivered Paper Mills) | | | |
| Soda Bleached | 3.00 | @ | — |

## Domestic Rags

New Rags

(Prices to Mill f. o. b N. Y.)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New White, No.1 | 7.50 | @ | 8.00 |
| New White, No. 2 | 6.50 | @ | 7.00 |
| Silesias No. 1 | 5.75 | @ | 6.00 |
| New Unbleached | 8.00 | @ | 8.50 |
| New Blue Prints | 4.50 | @ | 5.00 |
| New Soft Blacks | 4.00 | @ | 4.50 |
| Blue Overall | 5.50 | @ | 6.00 |
| Washables | 3.75 | @ | 4.00 |
| Fancy | 4.00 | @ | 4.50 |
| Mixed Khaki Cuttings | 4.25 | @ | 5.25 |
| Pink Corset Cuttings | 6.50 | @ | 7.00 |
| O. D. Khaki Cuttings | 5.15 | @ | 5.75 |
| Men's Corduroy | 3.00 | @ | 3.50 |
| New Mixed Blacks | 3.00 | @ | 3.25 |

Old Rags

| | | | |
|---|---|---|---|
| White, No. 1— | | | |
| Repacked | 5.25 | @ | 5.75 |
| Miscellaneous | 4.25 | @ | 4.75 |
| White, No. 2— | | | |
| Repacked | 3.00 | @ | 3.50 |
| Miscellaneous | 2.30 | @ | 2.50 |
| St. Soiled, White | 1.50 | @ | 1.75 |
| Thirds and Blues— | | | |
| Repacked | 2.25 | @ | 2.50 |
| Miscellaneous | 1.65 | @ | 1.85 |
| Black Stockings | 3.25 | @ | 3.75 |
| Roofing Rags— | | | |
| Cloth Strippings | 1.25 | @ | 1.30 |
| No. 1 | 1.25 | @ | 1.30 |
| No. 2 | .90 | @ | 1.00 |
| No. 3 | .70 | @ | .80 |
| No. 4 | .65 | @ | .70 |
| No. 5A | .50 | @ | .60 |

## Foreign Rags

New Rags

| | | | |
|---|---|---|---|
| New Dark Cuttings | 2.00 | @ | 2.15 |
| New Mixed Cuttings | 2.10 | @ | 2.40 |
| New Light Silesias | 5.50 | @ | 5.75 |
| Light Flannelettes | 6.25 | @ | 6.75 |
| Unbleached Cuttings | 7.50 | @ | 8.00 |
| New White Cuttings | 7.25 | @ | 7.75 |
| New Light Oxfords | 5.50 | @ | 5.75 |
| New Light Prints | 3.75 | @ | 4.25 |

Old Rags

| | | | |
|---|---|---|---|
| No. 1 White Linens | 7.00 | @ | 7.50 |
| No. 2 White Linens | 5.50 | @ | 6.00 |
| No. 3 White Linens | 4.00 | @ | 4.50 |
| No. 4 White Linens | 2.50 | @ | 3.00 |
| No. 1 White Cotton | 5.00 | @ | 5.50 |
| No. 2 White Cotton | 4.00 | @ | 4.50 |
| No. 3 White Cotton | 2.75 | @ | 3.75 |
| No. 4 White Cotton | 1.60 | @ | 1.75 |
| Extra Light Prints | 2.50 | @ | 2.75 |
| Ord. Light Prints | 2.10 | @ | 2.25 |
| Med. Light Prints | 1.65 | @ | 1.75 |
| Dutch Blue Cottons | 1.90 | @ | 2.10 |
| French Blue Linens | 2.65 | @ | 2.75 |
| German Blue Linens | 2.25 | @ | 2.40 |
| German Blue Cottons | 1.75 | @ | 1.85 |
| Checks and Blues | 1.60 | @ | 1.75 |
| Lindsay Garments | 1.10 | @ | 1.20 |
| Dark Cottons | .80 | @ | .90 |
| Old Shopperies | .75 | @ | .80 |
| New Shopperies | .75 | @ | .80 |
| French Blues | 1.80 | @ | 1.90 |

## Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

| | | | |
|---|---|---|---|
| Gunny No. 1— | | | |
| Foreign | 1.65 | @ | 1.80 |
| Domestic | 1.65 | @ | 1.80 |
| Wool Tares, light | 1.30 | @ | 1.40 |
| Wool Tares, heavy | 1.30 | @ | 1.40 |
| Bright Bagging | 1.30 | @ | 1.35 |
| Small Mixed Rope | .90 | @ | 1.00 |
| Manila Rope— | | | |
| Foreign | 2.05 | @ | 2.25 |
| Domestic | 2.20 | @ | 2.25 |
| New Burlap Cut | 2.10 | @ | 2.25 |
| Hessian Jute Threads— | | | |
| Foreign | 2.60 | @ | 2.75 |
| Domestic | 2.80 | @ | 3.00 |

## Old Waste Papers

(F. o. b. New York)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| Hard, white, No. 1 | 2.75 | @ | 2.85 |
| Hard White, No. 2 | 2.20 | @ | 2.30 |
| Soft, white, No. 1 | 2.30 | @ | 2.40 |
| White envelope cuttings | 2.80 | @ | 2.95 |
| Flat Stock— | | | |
| Stitchless | .85 | @ | .95 |
| Overissue Mag | .85 | @ | .95 |
| Solid Flat Book | .75 | @ | .85 |
| Crumpled No. 1 | .60 | @ | .65 |
| Solid Book Ledger | 1.75 | @ | 1.85 |
| Ledger Stock | .75 | @ | .85 |
| New B. B. Chips | .20 | @ | .30 |
| Manilas— | | | |
| New Env. Cut | 2.00 | @ | 2.20 |
| New Cuttings | 1.50 | @ | 1.65 |
| Extra No. 1 old | 1.25 | @ | 1.35 |
| Print | .50 | @ | .60 |
| Bogus Wrapper | .50 | @ | .60 |
| Container | .25 | @ | .30 |
| Old Kraft Machine— | | | |
| Compressed bales | 1.10 | @ | 1.20 |
| News— | | | |
| No. 1 White News | 1.60 | @ | 1.70 |
| Strictly Overissue | .40 | @ | .45 |
| Strictly Folded | .30 | @ | .35 |
| No. 1 Mixed Paper | .15 | @ | .25 |
| Common Paper | Nominal | | |

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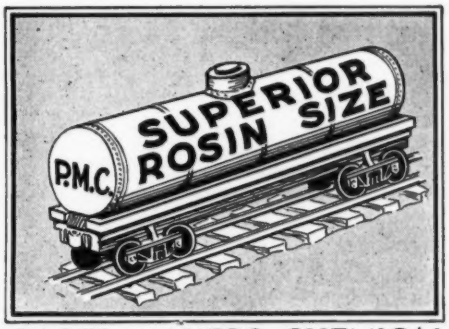


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### Twines
(F. o. b. Mill)

| | | | |
|---|---|---|---|
| Cotton— | | | |
| B. C., 18 basis | .32 | @ | .34 |
| No. 1 | .22 | @ | .24 |
| No. 2 | .21 | @ | .22 |
| No. 3 | .19 | @ | .20 |
| A. Italian, 18 basis | .38 | @ | .39 |
| Finished Jute— | | | |
| Dark 18 basis | .20½ | @ | .21 |
| Light 18 basis | .22½ | @ | — |
| Jute Wrapping, 3-6 Ply— | | | |
| No. 1 | .14¾ | @ | — |
| No. 2 | .13¾ | @ | — |
| Tube Rope— | | | |
| 4-ply and larger | .10¼ | @ | — |
| Fine Tube Rope— | | | |
| 4-ply | .12¾ | @ | — |
| 3-ply | .13¾ | @ | — |
| 2-ply | .14¾ | @ | — |
| Paper Makers Twine | | | |
| Balls | .08¾ | @ | — |
| Box Twine, 2-3 ply | .09 | @ | .10 |
| Jute Rope | .11 | @ | .12 |
| Amer. Hemp, 6 | .29 | @ | .31 |
| Java Sisal | | | |
| No. 1 Basis | .12 | @ | — |
| No. 2 Basis | .11¾ | @ | — |
| New Zealand Sisal | .11½ | @ | — |
| Sisal Lath Yarn— | | | |
| No. 1 | .14 | @ | .16 |
| No. 2 | .12 | @ | .14 |
| Manila Twine | .22½ | @ | .24½ |

## CHICAGO

### Paper
(F. o. b. Mill)

| | | | |
|---|---|---|---|
| Rag Bond | .30 | @ | .53¾ |
| Water Marked Sulphite Bond | .09 | @ | .12 |
| Sulphite Bond | .06¾ | @ | .11 |
| Superfine Writing | .18 | @ | .24 |
| No. 1 Fine Writing | .14 | @ | .18 |
| No. 2 Fine Writing | .12 | @ | .14 |
| No. 3 Fine Writing | .08½ | @ | .12 |
| No. 1 M. F. Book | .06½ | @ | .07½ |
| No. 2 M. F. Book | .05½ | @ | .06¼ |
| No. 1 S.&S.C. Book | .06¾ | @ | .07¾ |
| No. 2 S.&S.C. Book | .05¾ | @ | .06½ |
| Coated Book | .07½ | @ | .12 |
| Coated Label | .07½ | @ | .10 |
| No. 1 Manila | .04¼ | @ | .05¾ |
| No. 1 Fibre | .04¼ | @ | .05¼ |
| No. 2 Manila | .04¼ | @ | .04¾ |
| Butcher's Manila | .04 | @ | .04½ |
| No. 1 Kraft | 5.00 | @ | 5.50 |
| Southern Kraft | 3.75 | @ | 4.00 |
| No. 2 Kraft | 3.75 | @ | 4.00 |
| Wood Tag Boards | .04¼ | @ | .06¼ |
| Sulphite Screenings | .03 | @ | .03¾ |
| Manila Tissue | .07 | @ | .07¾ |
| White Tissue | .07¼ | @ | .07½ |
| (Delivered Central Territory) | | | |
| News, per ton— | | | |
| Rolls, contract | 62.00 | @ | — |
| Sheets | 67.00 | @ | — |
| Boards, per ton— | | | |
| Plain Chip | 30.00 | @ | 35.00 |
| Solid News | 32.50 | @ | 37.50 |
| Manila Lined Chip | 40.00 | @ | 45.00 |
| Container Lined— | | | |
| 85 Test | 50.00 | @ | 55.00 |
| 100 Test | 55.00 | @ | 60.00 |

### Old Papers
(F. o. b. Chicago)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 Hard White | 2.35 | @ | 2.40 |
| White Env. Cuttings | — | @ | — |
| No. 1 Soft Shavings | 2.10 | @ | 2.15 |
| Ledger & Writings | .70 | @ | .75 |
| Solid Books | .75 | @ | .80 |
| Blanks | 1.60 | @ | 1.65 |
| Krafts | 1.25 | @ | 1.35 |
| New Kraft Cuts | 1.35 | @ | 1.45 |
| Manila Env. Cuts | 1.50 | @ | 1.55 |
| Ex. No. 1 Manila | 1.25 | @ | 1.30 |
| Print Manila | .40 | @ | .45 |
| Overissue News | .40 | @ | .45 |
| Old Newspapers— | | | |
| No. 1 | .35 | @ | .40 |
| No. 2 | .30 | @ | .35 |
| Mixed Papers— | | | |
| No. 1 | .28 | @ | .30 |
| No. 2 | .20 | @ | .25 |
| Roofing Stocks— | | | |
| No. 1 | 30.00 | @ | — |
| No. 2 | 28.00 | @ | — |

## PHILADELPHIA

### Paper
(F. o. b. Mill)

| | | | |
|---|---|---|---|
| Bonds | .05 | @ | .40 |
| Ledgers | .07 | @ | .40 |
| Writings— | | | |
| Superfine | .12 | @ | .18 |
| Extra fine | .16 | @ | .22 |
| Fine | .15 | @ | .26 |
| Fine, No. 2 | .13½ | @ | .25 |
| Fine, No. 3 | .08½ | @ | .20 |
| Book, M. F. | .05 | @ | .07 |
| Book, S. S. & C. | .05 | @ | .07½ |
| Book, Coated | .08 | @ | .16 |
| Coated Lithograph | .07 | @ | .11 |
| Label | .07 | @ | .11 |
| No. 1 Jute Manila | .07 | @ | .09 |
| Manila Sul., No. 1 | .03¼ | @ | .05½ |
| Manila No. 2 | .03 | @ | .04 |
| No. 1 Kraft | .05¼ | @ | .06 |
| No. 2 Kraft | .03½ | @ | .04 |
| Southern Kraft No. 1 | — | @ | .03¾ |
| Southern Kraft No. 2 | — | @ | .03½ |
| Common Bogus | .03 | @ | .04 |
| (Delivered Philadelphia) | | | |
| News Print Rolls | 62.00 | @ | — |
| Straw Board | 50.00 | @ | — |
| News Board | 32.50 | @ | — |
| Chip Board | 30.00 | @ | — |
| Wood Pulp Board | 85.00 | @ | 95.00 |
| Binder Boards— | | | |
| No. 1, per ton | 75.00 | @ | — |
| No. 2, per ton | 68.00 | @ | — |
| Carload lots | 66.00 | @ | 70.00 |
| Tarred Felts— | | | |
| Regular | 55.50 | @ | 57.00 |
| Slaters (per roll) | .84 | @ | .94 |
| Best Tarred, 1-ply (per roll) | 1.95 | @ | 2.10 |
| Best Tarred, 2-ply (per roll) | 1.50 | @ | 1.60 |
| Best Tarred, 3-ply | 2.00 | @ | 2.25 |

### Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New White, No. 1 | .07 | @ | .08 |
| New White, No. 2 | .06 | @ | .06½ |
| Light Silesias | .05½ | @ | .06 |
| Silesias, No. 1 | .07 | @ | .09 |
| Black Silesias, soft | .05 | @ | — |
| New Unbleached | .07½ | @ | .08 |
| Washable, No. 1 | .03½ | @ | .04 |
| Blue Overall | .06 | @ | — |
| Cottons—According to grades— | | | |
| Washable, No. 2 | .02½ | @ | .03 |
| New Blue | .02½ | @ | .03 |
| Fancy | .04 | @ | — |
| New Black Soft | .04 | @ | .05 |
| New Light Seconds | .02 | @ | .02½ |
| New Dark Seconds | 1.85 | @ | 2.00 |
| Khaki Cuttings— | | | |
| No. 1 O. D. | .05 | @ | — |
| No. 2 Mixed | .04 | @ | .04¼ |
| Corduroy | .02½ | @ | .03 |
| New Canvas | .07½ | @ | .08 |
| New Black Mixed | .03 | @ | .03½ |

### Domestic Rags (Old)

| | | | |
|---|---|---|---|
| White No. 1— | | | |
| Repacked | 3.50 | @ | 4.00 |
| Miscellaneous | 3.00 | @ | 3.50 |
| M. G. | 5.00 | @ | — |
| Thirds and Blues— | | | |
| Miscellaneous | 1.50 | @ | 1.75 |
| Repacked | 2.00 | @ | 2.25 |
| Black Stockings (Export) | 3.80 | @ | 4.00 |
| Roofing Stock— | | | |
| Foreign No. 1 | 1.15 | @ | 1.25 |
| Repacked | .80 | @ | .90 |

### Bagging
(F. o. b. Phila.)

| | | | |
|---|---|---|---|
| Gunny, No. 1— | | | |
| Foreign | 1.50 | @ | 1.60 |
| Domestic | 1.75 | @ | — |
| Manila Rope | 2.75 | @ | 3.00 |
| Sisal Rope | 1.25 | @ | 1.50 |
| Mixed Rope | 1.10 | @ | 1.25 |
| Scrap Burlaps— | | | |
| No. 1 | 1.50 | @ | 1.60 |
| No. 2 | 1.10 | @ | 1.20 |
| Wool Tares, heavy | 3.00 | @ | — |
| Mixed Strings | 1.15 | @ | 1.25 |
| No. 1, New Light Burlap | 2.50 | @ | 2.75 |
| New Burlap Cuttings | 2.00 | @ | 2.25 |

### Old Papers
(F. o. b. Phila.)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 Hard White | 2.60 | @ | 2.65 |
| No. 2 Hard White | 2.30 | @ | 2.35 |
| No. 1 Soft White | 2.25 | @ | 2.50 |
| No. 2 Soft White | 1.40 | @ | 1.60 |
| No. 1 Mixed | .90 | @ | 1.00 |
| No. 2 Mixed | .60 | @ | .70 |
| Solid Ledger Stock | 1.50 | @ | 1.60 |
| Writing Paper | 1.05 | @ | 1.25 |
| No. 1 Books, heavy | 1.00 | @ | 1.15 |
| No. 2 Books, light | .90 | @ | .95 |
| No. 1 New Manila | 2.15 | @ | 2.30 |
| No. 1 Old Manila | 1.50 | @ | 1.60 |
| Print Manila | .50 | @ | .60 |
| Container Manila | .45 | @ | .50 |
| Old Kraft | 1.25 | @ | 1.30 |
| Common Paper | .25 | @ | .30 |
| No. 1 Mixed Paper | .25 | @ | .30 |
| Straw Board, Chip | .35 | @ | .40 |
| Binders Board, Chip | .35 | @ | .45 |
| Corrugated Board | .50 | @ | .60 |
| Overissue News | .40 | @ | .45 |
| Old Newspaper | .25 | @ | .30 |

## BOSTON

### Paper
(F. o. b. Mill)

| | | | |
|---|---|---|---|
| Ledgers— | | | |
| Sulphite | .07½ | @ | .12½ |
| Rag Content | .15 | @ | .30 |
| All Rag | .38 | @ | .52½ |
| Bonds— | | | |
| Sulphite | .06½ | @ | .11½ |
| Rag content | .15 | @ | .30 |
| All rag | .36½ | @ | .65 |
| Writings | .06½ | @ | .20 |
| Superfines | .11 | @ | .31 |
| Book, Super | .06 | @ | .09 |
| Book, M. F. | .05½ | @ | .08½ |
| Book, Coated | .08½ | @ | .18 |
| Coated Litho | .09 | @ | .12 |
| Label | .09½ | @ | .15 |
| Jute Manila No. 1 | .11 | @ | .15 |
| Manila, Sul. No. 1 | .04¾ | @ | .06¼ |
| Manila, Sul. No. 2 | .03¾ | @ | .04½ |
| No. 1 Kraft | .04½ | @ | .05¾ |
| No. 2 Kraft | 0.3½ | @ | .04¼ |
| (F. o b. Boston) | | | |
| Southern Kraft | .03½ | @ | .03¾ |
| (F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.) | | | |
| Common Bogus | .02 | @ | .02¾ |
| Delivered New England points | | | |
| News Print, rolls | 61.50 | @ | — |
| Straw Board, rolls | .009 | — | @52.50 |
| Straw Board in Sheets, basis 35s to 70s | — | @ | 50.00 |
| Filled News Board | 32.50 | @ | — |
| Chip Board | 30.00 | @ | — |
| Chip Board (Creasing) | 32.50 | @ | — |
| Single Manila Lined Chip | 45.00 | @ | — |
| Single White, Patent Coated News Board | | | |
| Bender, No. 1 | 60.00 | @ | 75.00 |
| Bender, No. 2 | 55.00 | @ | 65.00 |
| Wood Pulp Board | 75.00 | @ | 80.00 |
| Binder Boards | 67.50 | @ | 75.00 |

### Old Papers
(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 Hard White | 3.25 | @ | 3.75 |
| No. 2 Hard White | 2.60 | @ | 2.90 |
| No. 1 Soft White | 2.25 | @ | 2.40 |
| No. 1 Mixed | .90 | @ | 1.00 |
| No. 2 Mixed | .60 | @ | .65 |
| Solid Ledger Books | 1.75 | @ | 2.25 |
| Overissue Ledger Stock | 1.35 | @ | 1.60 |
| Mixed Ledgers | 1.15 | @ | 1.30 |
| No. 1 Books, heavy | .80 | @ | 1.00 |
| No. 1 Books, light | .55 | @ | .70 |
| Crumpled Stitchless Book Stock | 1.00 | @ | 1.25 |
| Manila Env. Cuttings | 1.85 | @ | 2.00 |
| No. 1 Old Manila | — | @ | 1.00 |
| White Blank News | 1.50 | @ | 1.60 |
| Kraft No. 1 | — | @ | 1.10 |
| Manila | .80 | @ | .90 |
| No. 1 Mixed Paper | — | @ | .16 |
| Overissue News | — | @ | .40 |
| Old Newspapers | .25 | @ | .30 |
| Box Board, Chip | .16 | @ | .20 |
| Corrugated Boxes | .35 | @ | .40 |

### Bagging
(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Gunny No. 1— | | | |
| Foreign | — | @ | 1.80 |
| Domestic | 1.60 | @ | — |
| Manila Rope— | | | |
| Foreign | 2.25 | @ | — |
| Domestic | 2.50 | @ | — |
| Transmission Rope | 1.75 | @ | — |
| Mixed Strings | — | @ | .70 |
| Jute Rope | — | @ | 1.05 |
| Jute Carpet Threads | .90 | @ | 1.05 |
| Bleachery Burlap | — | @ | 3.25 |
| No. 1 Scrap Burlap | — | @ | 1.25 |
| Scrap Sisal | 1.35 | @ | 1.40 |
| Scrap Sisal for shredding | — | @ | 1.50 |
| Wool Tares, heavy | 1.30 | @ | — |
| New Burlap Cutting | 1.75 | @ | 2.00 |
| Australian Pouches | 2.50 | @ | — |
| Heavy Baling Bagging | — | @ | 1.75 |
| Paper Mill Bagging | — | @ | .85 |
| Bagging No. 2 | .50 | @ | — |
| No. 1 Burlap | — | @ | 3.50 |

### Domestic Rags (New)
(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New White No. 1 | .06¼ | @ | .07 |
| New White No. 2 | — | @ | .06 |
| Silesias No. 1 | .06 | @ | .06¼ |
| New Unbleached | — | @ | .08 |
| Fancy | .04 | @ | .04½ |
| Washable | .04 | @ | .04¾ |
| Cottons—According to grades | | | |
| Blue Overalls | .06¼ | @ | .06¾ |
| New Black, soft | .04 | @ | .04¾ |
| Khaki Cuttings | .04 | @ | .04¾ |
| O. D. Khaki | .04½ | @ | .05 |
| Corduroy | .03 | @ | .03½ |
| New Canvas | .08 | @ | .08¼ |

### Domestic Rags (Old)
(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Canvas | .04½ | @ | — |
| White No. 1— | | | |
| Repacked | 4.75 | @ | 5.25 |
| Miscellaneous | 5.00 | @ | — |
| White No. 2— | | | |
| Repacked | .04½ | @ | .05 |
| Miscellaneous | .03½ | @ | .04 |
| Twos and Blues | 2.50 | @ | 2.75 |
| Thirds and Blues— | | | |
| Repacked | 1.75 | @ | 2.00 |
| Miscellaneous | 1.50 | @ | 1.75 |
| Black Stockings | 3.25 | @ | 3.50 |
| Roofing Stock— | | | |
| No. 1 | .75 | @ | .80 |
| No. 2 | .65 | @ | .70 |
| No. 3 | .50 | @ | .60 |
| No. 4 | — | @ | .60 |

### Foreign Rags
(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Dark Cottons | .75 | @ | .85 |
| New No. 1 White Shirt Cuttings | 7.75 | @ | 8.00 |
| Dutch Blues | — | @ | 1.80 |
| New Checks & Blues | 4.00 | @ | 4.50 |
| Old Fustians | 1.65 | @ | 1.75 |
| Old Linsey Garments | .85 | @ | .95 |

## TORONTO

### Paper
(F. o. b. Mill)

| | | | |
|---|---|---|---|
| Bond— | | | |
| No. 1 Sulphite | .12½ | @ | — |
| No. 2 Sulphite | .09¾ | @ | — |
| No. 1 Colored | .13½ | @ | — |
| No. 2 Colored | .09½ | @ | .10½ |
| Ledgers (sulphite) | — | @ | — |
| Ledgers, No. 1 | .36 | @ | — |
| Ledgers, No. 2 | .27 | @ | — |
| Writing | .09½ | @ | .10 |
| Book— | | | |
| No. 1 M. F. (carloads) | 7.12½ | @ | 7.60 |
| No. 2 M. F. (carloads) | 6.90 | @ | 7.35 |
| No. 3 M. F. (carloads) | 6.65 | @ | 7.15 |
| No. 1 S. C. (carloads) | 7.60 | @ | 8.10 |
| No. 2 S. C. (carloads) | 7.35 | @ | 7.85 |
| No. 3 S. C. (carloads) | 7.12½ | @ | 7.60 |
| No. 4 S. C. (carloads) | 5.95 | @ | 6.40 |
| No. 1 Coated and Litho | 13.25 | @ | — |
| No. 2 Coated and Litho | 12.25 | @ | — |
| No. 3 Coated and Litho | 10.00 | @ | 11.50 |
| Coated tinted | 14.50 | @ | — |
| Wrapping— | | | |
| Rag Brown | 4.95 | @ | — |
| White Wrap | 5.25 | @ | — |
| "B" Manila | 5.00 | @ | — |
| No. 1 Manila | 5.40 | @ | — |
| Fiber | 5.40 | @ | — |
| Kraft, M. F. | 5.90 | @ | — |
| Kraft No. 2 | 5.40 | @ | — |

(Delivered Toronto)

| | | | |
|---|---|---|---|
| News, per ton— | | | |
| Rolls (contract) | 61.50 | @ | 62.00 |
| Sheets | 67.00 | @ | — |

### Pulp
(F. o. b. Mill)

| | | | |
|---|---|---|---|
| Ground Wood | 30.00 | @ | 32.00 |
| Sulphite easy bleaching | 50.00 | @ | — |
| Sulphite, news grade | 70.00 | @ | — |
| Sulphite, bleached | 72.50 | @ | 75.00 |
| Sulphate | 60.00 | @ | — |

### Old Waste Paper
(In carload lots, f. o. b. Toronto)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| White Env. Cut | 2.80 | @ | — |
| Soft White | 2.60 | @ | — |
| White Blk. News | 1.50 | @ | — |
| Book and Ledger— | | | |
| Flat Magazine and Book Stock (old) | 1.10 | @ | — |
| Light and Crumpled Book Stock | 1.20 | @ | — |
| Ledgers and Writings | — | @ | — |
| Manilas— | | | |
| New Manila Cut | 1.50 | @ | — |
| Printed Manilas | .80 | @ | — |
| Kraft | 1.90 | @ | — |
| News and Scrap— | | | |
| Strictly Overissue | .70 | @ | — |
| Strictly Folded | .70 | @ | — |
| No. 1 Mixed Paper | .60 | @ | — |

### Domestic Rags
(Price to mills, f. o. b. Toronto)

| | | | |
|---|---|---|---|
| No. 1 White Shirt Cuttings | .09½ | @ | .10 |
| Fancy Shirt Cuttings | .06 | @ | .06¼ |

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